The Commercial Car Journal

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A. E. A. to Help the Motor Truck Industry to Bigger Profits

Appropriate Nearly $70,000 to Carry on the Work Started a Year Ago. Every Truck Dealer Should Take Advantage of This Opportunity to Increase His Departmental Profits

By A. V. COMINGS

AROUSED to the tremendous possibility of service to the motor truck industry by the COMMERCIAL CAR JOURNAL'S recent survey of this "billion dollar industry," the five hundred members of the Automotive Equipment Association decided at their Colorado Springs Convention in late June to carry their merchandising campaign to the motor truck dealers of the country during the next twelve months.

The same methods that have built greater profits for passenger car dealers in their equipment departments and in their service stations will be brought to the truck dealer, and as a result it may well be predicted that truck dealers will be helped to greater profits, truck service stations will be helped to better their service to motor truck owners, and the entire commercial car industry will be benefited in a practical and profit-making manner.

The manufacturers and jobbers of automotive equipment and service station machinery voted an assessment of $125 per member to carry on this work, and the whole-hearted enthusiasm with which this money was appropriated showed the intense earnestness with which the association views this great new development in its work. Nearly $70,000 has been made available to carry on the campaign during the year.

The decision as to helping the motor truck industry came on the last day of the convention's sessions. S. D. Black, president of Black & Decker, a director of the association and chairman of its Foreign Trade Committee, brought to the attention of the members the possibility of serving the motor truck field along the same lines that it has served the passenger car industry. Securing the floor at the morning session, Mr. Black read over the figures on motor truck production, equipment and servicing prepared by the commercial survey department of COMMERCIAL CAR JOURNAL, and pointed out the urgent advisability of going into the motor truck field with a merchandising campaign during the coming months.

"We have already demonstrated what can be accomplished by organized effort along merchandising lines by the great progress we have made in helping the passenger car industry to better car equipment and better service station methods. It is just as important for us to carry this work into the motor truck field, for the commercial car has become a vital necessity to this country, and we should be just as much interested in its proper equipment and servicing, so that it may give to its owner a maximum of transportation efficiency.

"The figures I have just read to you from this survey give you a very comprehensive idea of the tremendous possibility for sales in the commercial car field, and I believe we may do a real service to this great industry as we have to the passenger car field, by bringing to the truck dealers the real help that we have already brought to those men who are merchandising passenger cars."

What Has Been Accomplished

The merchandising movement in the passenger car field has long passed the experimental stage, in fact it passed that stage mighty soon after the work was started.

Manufacturers and jobbers, working in harmony all over the United States, have shown the passenger car dealer how to make more money than he ever made before by using better merchandising methods in his automotive equipment department and by properly equipping his service shops. They have taken the story to him by word of mouth and by the "Ask 'em to buy" film; tens of thousands of dealers, service men and automotive equipment dealers have attended hundreds of meetings.

Eager to test the practical application of the methods outlined, these dealers have applied the methods to their own establishments, and have been astounded at the increase in business that has come to them as by magic.

Sales have mounted to figures never before deemed

possible, and the installation of the right kind of equipment in their service shops—hitherto thought impossible because of the expense—has brought increased business. Dealers were enabled to handle jobs with shop costs so reduced that they made greater profits than ever, even though they charged the car owner less for the service performed than ever before.

The "Shop Profits" Film

The association has prepared a new moving picture film, entitled "Shop Profits," which will be used in showing the truck dealer and all others in this industry, ways to make his service station more productive and profitable. It is homely and close to the everyday in service station routine, and it makes the service station man realize in a concrete way the things he has done in the past that spelled failure and the things that are easily done that will PRODUCE real profits in the future.

How You Can Cash in

This film will be shown all over the United States during the next twelve months. Manufacturers and jobbers in every section of the country will arrange great meetings of the trade in every section. Everyone in the industry in each section will be notified when the meetings will be held. **All the truck dealer has to do to cash in on this better business campaign is to go to the meeting, see the film, hear the better business talks, and put the methods into operation in his own place of business.**

There will be some who go to these meetings who will say "Old stuff, it can't help me any." And there will be others, progressive, alive-to-the-minute motor truck merchandisers, who will see in this merchandising help, concrete suggestions for the betterment of their business. These latter will act on what they have learned in the meetings, and they will be doing business and making more money than they ever thought possible a year, two years, five years from now. While the fellow who said "Old stuff" will either be wondering why business is so rotten, or will have passed completely from the picture.

Passenger car dealers all over the United States have added to their profits through attending these meetings the past year and then putting into practice the various better business methods shown them. **It but remains for the motor truck dealer to duplicate the real successes already attained by the passenger car men, and it rests with the truck dealers alone,** for they will be given every opportunity to see this new film and hear the business talks that will accompany it.

Information for Truck Dealers

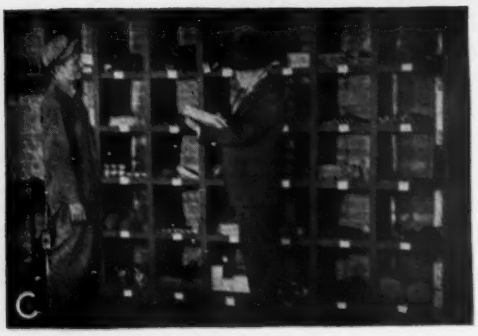
The merchandising department of the Automotive Equipment Association is under the management of Ray W. Sherman, and its office is at 1813 City Hall Square Building, Chicago. Mr. Sherman and his assistants in this work will speak at many of the meetings, and they will be kept informed of meeting dates, etc. Information as to places and dates may always be secured from Mr. Sherman's office.

"Shop Profits," the New A. E. A. Film for Better Merchandising

The unprecedented success of the "Ask 'Em to Buy" film of the Automotive Equipment Association, has prompted the organization to release a new picture which is designed to show how the dealer's shop can make money through the application of proper methods of record-keeping and equipment selling. It covers many phases of shop operation in detail. The film was first shown at the recent convention of the A. E. A. at Colorado Springs.

A: Tom Crawford, the Hero of the Story, Who Has the Will But Not the Way to Make His Garage Business Pay.

B: Tom Finds the Way Through a Bookkeeper Friend, and With the New System, the Red Ink on the Balance Sheet Changes to Blue



C: One of the First Sensible Things Tom Did Was to Rearrange His Storeroom. From Then on Order Emerges From Chaos.

D: After Tom Started to Make Money He Invested in a New Building. Here is the All-Steel Stockroom That Profits Bought.

Book on "Shop Profits"

As an auxiliary to the meetings and film the association has issued a book on "Shop Profits," written by Mr. Sherman, and this book is free for the asking to any motor truck dealer who wants it. It may be secured from any jobber who is a member of the association.

The book is based on the theory that the dealer in this business needs all the profits he can possibly make, and it is full of concrete helps that cannot fail to make more money for the truck dealer who reads it and puts the ideas into practice in his own shop. Ask your jobber for this book, and use it.

The Dealer's Part

Some truck dealers, not acquainted with the details of this merchandising campaign, will look upon it as a selfish effort and pass it by.

There has never been a co-operative movement in the automotive industry that has helped every one connected with it as has this merchandising campaign of the Automotive Equipment Association. The manufacturer, spending his tens of thousands of dollars in its promotion, and the jobber spending his thousands, both reap benefits, to be sure.

BUT THEY DO NOT MAKE ONE CENT OF PROFIT FROM THIS CAMPAIGN UNTIL THE CAR AND TRUCK DEALER HAVE FIRST INCREASED THEIR OWN BUSINESS AND ADDED TO THEIR OWN PROFITS!

And that's a pretty fine kind of co-operative profit-making plan that every truck dealer in the country can well afford to tie up with.

The motor truck dealer today needs all the profits he can make out of all departments of his business.

COMMERCIAL CAR JOURNAL'S advice to motor truck dealers is to attend these merchandising meetings, see this "Shop Profits," and "Ask 'em to buy" film, get the book on "Shop Profits," and then MAKE MORE MONEY IN YOUR BUSINESS by applying these methods as they should be applied to the merchandising of motor trucks, the servicing of motor trucks and the equipping of motor trucks.

THERE ARE REAL PROFITS IN THIS FOR THE DEALER WHO WILL!

Motor Bus Session Creates the Most Interest at S. A. E. Convention

Nearly 550 Attend White Sulphur Springs Summer Meeting

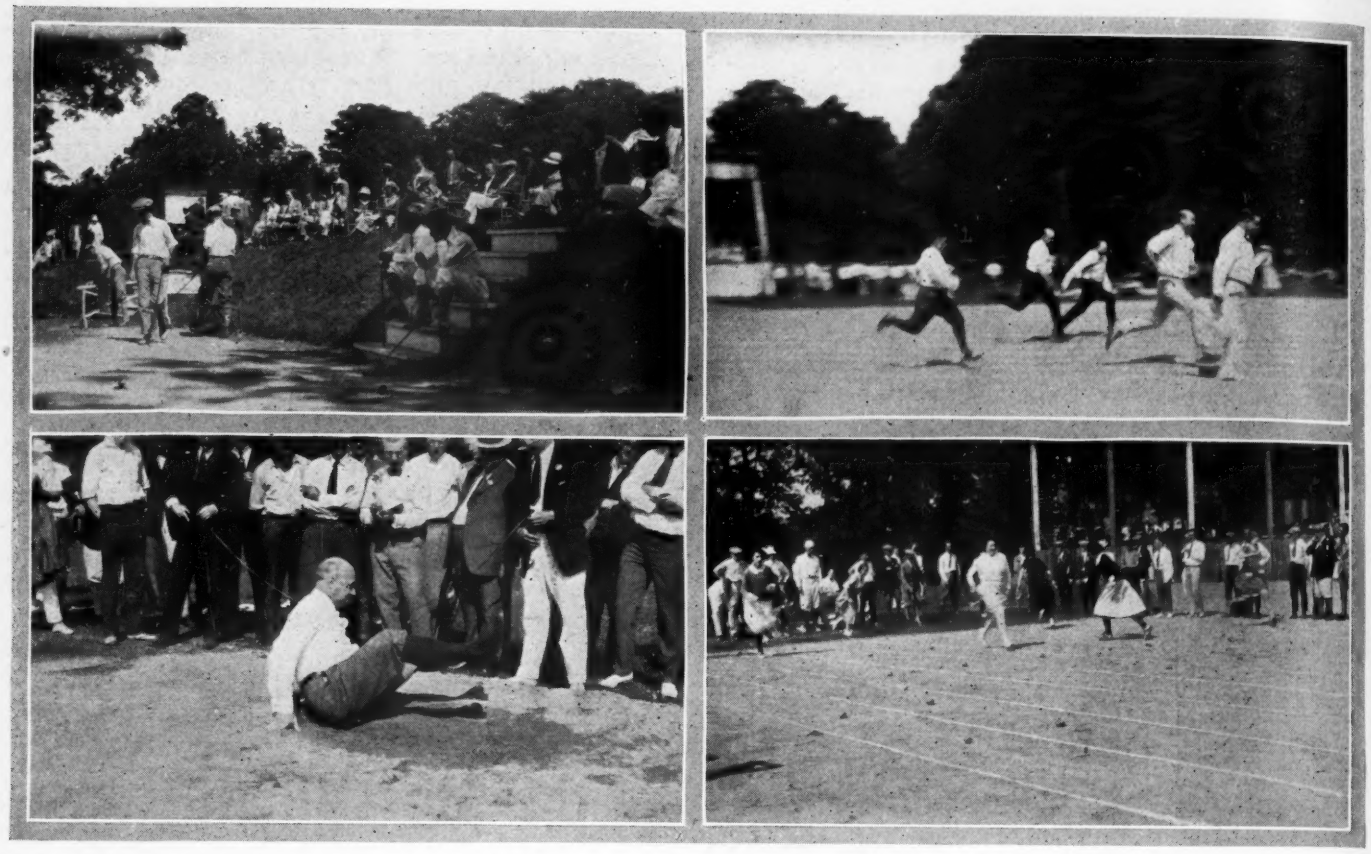
Herbert W. Alden Nominated for President.

Sports Program Vies With Technical Sessions

WITH an attendance of 531 members and guests, the summer meeting of the S. A. E. at White Sulphur Springs can be recorded in the archives of the society as one of the most successful held thus far. The scenic beauty of the surrounding country side, the excellent service rendered by the Greenbrier Hotel and the recreation features of this wonderful spot, will linger a long while in the memory of those who attended this year's convention.

Undoubtedly a strong bid will be made for the same place for next year's meeting. Quite a few reservations were canceled at the last minute and because the attendance was somewhat less than expected, it is believed that the distance had some influence on the attendance. It is unfortunate that this ideal place for such a convention is not more centrally located, but this disadvantage is far outweighed by the many attractions which White Sulphur affords. In fact, many of those present expressed their approval of the place by stating that next year they would make arrangements to stay over for a few days or a week, simply "to rest up," after the convention, provided it was held at the same place.

Which simply goes to show that everyone had a good time. With the exception of a few showers, the weather throughout the week was ideal. The invigorating mountain air had a wonderfully bracing effect on some feverish brows the morn-



Golf Was the Most Popular Sport Throughout the Week; the Fat Men Put Up a Fine Race; in the Broad Jump Some Contestants Did Not Figure on the Law of Gravity; the Ladies Went After Those Potatoes With Some Speed

ing after, and especially after the Special Dinner on Thursday evening, when as someone expressed, the "lid was off." At this meeting some of the sections pulled stunts, the Metropolitan section staging a burlesque on the annual dinner of the society; the Detroit section staged a fake radio entertainment supposed to be broadcasted from Detroit. A phonograph screened from the audience proved to be the modus operandi. Many did not hesitate to give their opinion to the effect that the stunt was not up to "standard." The Cleveland boys who entertained after the luncheon and dinner hours with baritone solos and piano recitals, are to be congratulated for their splendid rendition of operatic selections.

The sports program was well arranged. With two golf courses, this sport proved to be the most popular of the week. The 18-hole course will long be remembered by some of those who lost ball after ball at the first tee. The creeks seemed to have an uncanny penchant for golf balls and the demand for balls came near exceeding the supply.

Tennis attracted a large number of entrants, while trap shooting (compositor, be careful) claimed a few participants. The intersectional baseball matches did not make the appeal as in former years. The Cleveland team won with a score of 10-8, taking the cup held by the Metropolitan section last year.

Many participated in the aquatic sports. Balloon relay races, a night shirt race, egg race, plate diving contest besides other stunts furnished lots of amusement for the crowd which lined the swimming pool.

Thursday afternoon was given over to field day events. The usual list of events were provided, and these sports brought forth a great number of participants. Points were alloted to all the contestants in all events throughout the week, so as to determine what section and what individual won the most. The Metropolitan section won the cup for the greatest score made throughout the week, with Cleveland second and Detroit third.

African golf also played an important role in the sporting events, but failure on the part of the Sports Committee to supply adequate means for checking up the total number of passes made, this record will have to be omitted. With this exception the committee in charge of the sports did a fine job. The social side of the convention was a huge success.

The Professional Sessions

The motor bus session proved to be the most interesting and attracted the greatest number of any of the five professional sessions, which included buses, research, passenger car, fuel and engines and aeronautics. More members attended the motor bus session than any other, which is surely an indication that the subject is becomiing of greater interest to the industry and that the engineers are finding herein a field which requires considerable study.

At this session two papers were presented, the first by Col. Green, of the Fifth Ave. Coach Co., and the second by R. E. Plimpton. In presenting his paper, Col. Green set a precedent by outlining the high spots in such a manner that those who did not read it beforehand obtained a very comprehensive idea of its contents. Green's paper takes into consideration the fundamentals rather than the details of bus design and contains a great deal of important information which is of value to the concerns contemplating entering the bus manufacturing field. In this issue we are publishing extracts from this paper. A short discussion followed.

One member asked for Green's opinion in regards to the overhang of the body, the construction of the wheel housing, clutch brakes and the desirability of straight frame construction. Green stated that body overhang is undesirable because it adds to the hazards of operation in traffic and makes for uncomfortable riding. Wheelhouses should give little interference with seating arrangements, he stated, provided the tread of the vehicle is wide enough and the housing is properly constructed. Green stated that the clutch brakes are unnecessary. The straight frame is employed on the single deck buses because this type is used principally for general utility purposes and is usually employed on rougher roads than the double deck, which is confined almost exclusively to boulevards.

The question of friction also was brought up. In this paper, Green made the statement that the friction in the sleeve valve type of engine employed in his buses was lower than that of poppet valve type. One member asked for an explanation of this, but Green was unable to account for the exact reason but gave the engineers figures which they could compare with such figures as they may have on poppet valve engines.

Discussion also took place regarding spark plug location. Although located at a point where the mixture is lean rather than rich, Green claims that the central location of the spark plug has worked out most satisfactorily.

The possibility of the steam bus came up for discussion. Green feels that the steam bus should be given intensive study. He frankly stated that the bus is such a new proposition that much development work is required in this field.

R. E. Plimpton, in his paper, "Fundamental Characteristics of Present Day Buses," outlined the various types of buses in general use, particularly the country or suburban bus. Steam and electric power are discussed and chassis units are considered in some detail. This paper also contains comments on fare collecting devices. Taxes and their effect on the bus operator are referred to, together with local legal operations. In some instance these taxes amount to one thousand dollars per vehicle. Heating, lighting and ventilation as well as other convenience factors are taken up in this paper. Time did not permit any discussion of this paper.

The service problem was ably handled by F. A. Bonham in his address, "The Automotive Engineer and Our Service Problems." He did not mince his words when he stated "that the average automobile engineer has been negligent in failing to modulate his design in such a way as to service the needs of the service man." He went on to explain that the engineer has failed to understand the intricate nature of the service problem and also the somewhat limited class of personnel with which it is necessary to deal in service work.

He advocated the reduction of costs in service; the replacement of units with simple tools; the lowest possible cost on fast wearing parts so as to invite replacement when necessary; the use of simple repair tools because of the fact that 60 per cent of the repair work is done in independent garages which cannot afford to carry a long stock of special tools; and last but not least, greater dependability. In regards to dependability, he stated that the engineer in designing motor cars "should work out a simple method of repair, bearing in mind the quality of labor available for the common run of service work, which would immediately reduce the service problem to its lowest terms."

Herbert W. Alden, of the Timken-Detroit Axle Co., was nominated for president, and H. M. Crane as first vice-president.

Principles of Motor Bus Design and Operation

By G. A. GREEN, General Manager and Engineer Fifth Avenue Coach Company, New York City

THE questions that builders and intending operators are asking today are, What constitutes a bus? and In what respects does a bus differ from other classes of automotive equipment? There seems to be a general agreement that a properly designed bus has special requirements; that it differs materially from equipment such as trucks and automobiles.

I have been requested to give the Fifth Avenue Coach Co.'s views on this subject. It is, of course, possible to deal with only the broader phases. No attempt will be made to discuss detail design, but merely to establish the principles on which it is thought such design should be based. We believe that with problems of this character, it is principles that really count, that once having clearly established them, the rest is comparatively easy. Actually, there is no real mystery in motorbus design. It is purely an engineering problem and there is available ample engineering talent to afford its solution, but the principles must first be established.

In the preparation of this paper the underlying thought has been to treat the subject in an impersonal manner.

The Unwisdom of Overloading

We believe this question is of paramount importance, not only to the automotive industry but to all who are contemplating bus operation in any form. Our policy is predicated on a seat for every passenger. At the inception of our business this was our slogan. We have never departed from it and we never expect to do so. We are convinced that this policy has been, perhaps more than anything else, a factor in the building up of our enterprise.

It is, of course, possible to carry a certain percentage of standees in a vehicle, the spring-suspension of which has been correctly designed to carry properly a seated load. In our judgment, however, this figure should not exceed 30 per cent. But even this is unsatisfactory, for once standees are permitted, their limitation is most difficult.

Obviously, the problems requiring solution from the standpoint of spring-suspension are much less numerous with vehicles operating on rails than is the case with rubber-tired equipment running over roads. With the former, overloading has no immediate serious consequences—at least from the standpoint of the rolling stock. The spring-suspension with a bus must of necessity be a compromise between minimum and maximum loads. If the range is too wide, bad riding conditions must obtain during by far the greater percentage of the total time, for the packed loads will, generally speaking, occur only during the rush periods. This means that 90 per cent of the time there will be a state of discomfort. This will have an extremely bad effect on both the vehicle and its occupants. Another vital point to consider is that a bus is not kept in a comparatively straight and rigid course by steel rails. The advantageous flexibility of a bus in steering its course at will has its disadvantages if standees are permitted, for the shifting of the weight of the standees when the bus swerves tends to make it unsafe, throwing the passengers about inside the vehicle and rendering the operator liable to heavy damage and accident suits.

We are unqualifiedly behind any movement that will aid the bus to come into and remain in the field that is peculiarly its own. We are positive that the short road is the seated load and if builders will bear this in mind from the standpoint of design and warranty, the automotive industry will assuredly find ample repayment.

We earnestly hope that the automotive industry will read the writing that is so plain to see and that it will profit by what has occurred with the street railways, in regard to the matter of overloading. For it must be remembered that the bus has its limitations and that it is not the cure-all for every ill that transportation is heir to.

The Matter of Fares

Strictly speaking, there is no actual relationship between the design of a bus and the fares charged to passengers. Obviously, however, the better the design, the lower will be the operating cost. Naturally, this will make for lower fares. We believe that in the present state of the art no real success can be attained with less than a 10-cent fare. We are, of course, assuming operation based on seated loads and ample service during both the light and the heavy hours. But with character service, properly designed and maintained equipment, the people are quite willing to pay a 10-cent fare. There is ample evidence of this in New York City, Detroit, Chicago, Toronto, and other cities.

The necessity for a 10-cent fare does not rest with only the bus. Many electric railways need a 10-cent fare in order to be put on a paying basis. The last available tabulation shows that 140 electric railways in the United States are receiving a 10-cent fare, and that over 95 per cent of the electric railways in the cities of the United States have received varying increases in fare during the last few years. Some cities have a first fare of only 6 or 7 cents, but to this must be added a charge for transfers. Many cities have been placed on the zone system that works out in some cases as high as 3½ cents per mile. Even with an increased fare, the last available figures show that about 10 per cent of the electric railways in the United States are in the hands of receivers.

It is not the purpose of this paper to enter into a lengthy discussion of operating costs, for unless this matter is treated in considerable detail, accurate deductions are almost impossible. Obviously, a correct comparison of operating expenditures can be made only on the assumption that similar detail classifications are employed in conjunction with a similar accounting system. Here the difficulties begin, for as yet few companies operating buses use the same accounting methods.

No doubt there are many who, while not desirous of making a minute survey of details of operating costs, would be interested in knowing something about this rather complicated matter other than mere expressions of opinion. For this reason there is shown in Table 1 not the customary detail cost statement, but what might be described as an income analysis. Actually it represents a distribution of the dime as received from each of those who rode on our buses during the year 1921.

Table 1—Distribution of Each Fare Received

	Cents
Total Operating Expenses	6.77
Total Taxes	0.86
Reserved for Injury and Damage Claims	0.08
Reserved for Depreciation	0.60
Interest on Capital Investment	0.55
Net Income	1.44
Total	10.00

From these figures it is abundantly clear that we should have made a very bad showing with a fare of less than 10 cents. Here is emphasized very clearly the fact that the success or failure from the standpoint of an undertaking such as our own depends absolutely on the addition or subtraction of what at first sight appear to be insignificant amounts. To emphasize this point, during 1921 we carried a total of 52,216,946 passengers, so the net income from this source at 1.44 cents per passenger works out at $751,924.02. To permit of a comparison being made between the conditions confronting us and those faced by others, it should be noted that we operate a total of 25 miles of one-way route, that our longest run is 10.2 miles and our average haul 5.0 miles.

The Bus and Its Service Requirements

Before discussing the bus from a design standpoint, something may be gained by outlining the character of service that must be expected, for it is here that the average engineer underestimates the difficulties to be encountered. First, let us consider the cumulative result of a year's performance of the physical limitations that are primarily responsible for wear-and-tear. For the sake of argument it may be assumed that these data are applicable to any bus operated by any public utility. The figures are presented in Table 2.

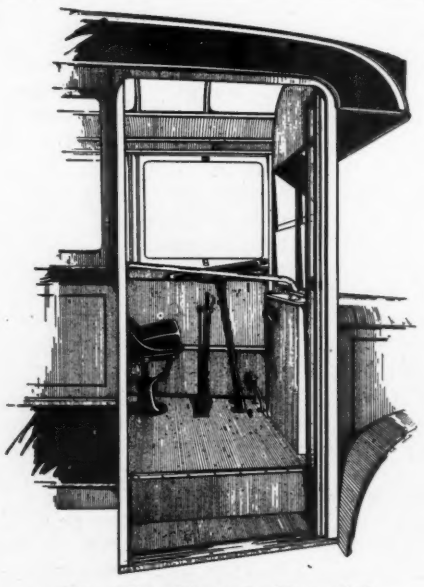
Table 2—Data on Bus Operation in New York City

Yearly Mileage	30,000 to 60,000
Stops and Starts	180,000 to 360,000
Change-Speed Applications	360,000 to 720,000
Clutch Applications	360,000 to 720,000
Different Drivers	1,460 to 2,920
Brake Applications	200,000 to 400,000

Assuming the same general plan of upkeep as employed by the Fifth Avenue Coach Co., each bus would be thoroughly inspected after every 2000 miles of operation and rebuilt and repainted yearly. A vehicle would be expected to require no incidental repairs between inspectional periods and no major repairs between either inspections or yearly overhauls. The inspectional periods would occur approximately every 14 days. The maximum inspectional allowance is 8 hr. The allowance for yearly overhaul is 7 days. Roughly, it may be said that under these conditions, each bus is scheduled for service 342 days out of 365.

The statistics noted as to mileage, stops and starts, and the like, speak for themselves. Those who have never had control of a public utility operating buses cannot possibly picture the sum total of the abuse the average bus must suffer. More than anything else, frequent changes in drivers result in increased service difficulties. It may be safely said that if one could with a bus have the same driver daily at least 50 per cent of the service troubles would disappear. This however, is quite impractical, since the loss in earnings would many times offset the decreased service cost. Even with an operation of moderate size, the bus must of necessity lose its identity. It becomes merely a transportation unit. There must be changes in drivers daily, many of whom will feel scarcely any pride of ownership. All they are concerned with is being on schedule time. This means that the bus will be subject to extraordinary abuse. The mechanisms of the bus must be capable of treatment of the most brutal nature; otherwise constant failures will occur.

Before one can proceed very far from a design standpoint, there must be some fairly clear conception of the vehicle life that is to be expected. In this connection it is necessary to lay stress on the fact that motorbus design is still in its initial stages. Five to 7 years is about the maximum life of the most modern type. It is not a matter of wear-and-tear, for a vehicle may be so well cared for that there is no limit to its life. Obsolescence is the real issue. The ideal conception is to carry out the design so that the various units which when assembled comprise the complete structure, have as nearly as possible an equal life.



The Flat Floor is Essential
It reduces the accident hazard, repair costs and increases structural strength

Controlling Design Factors

In its broadest sense we believe the controlling design factors from the standpoint of the motorbus, in the order of their importance, are

(1) Safety
(2) Comfort and convenience of the public
(3) Minimum operating cost

* * *

The design of a motorbus from a safety standpoint includes certain basic features which must be incorporated in the general constructional plan. There are also other detail features which must be included. The latter are dictated by human considerations. Reference is now being made to providing the driver with reasonable comfort and convenience so that no undue hardship will be inflicted upon him as a result of the performance of his duties. First, let us consider the former. These are

(1) Low center of gravity
(2) Wide frame, track and spring centers and general dimensions
(3) Effective brakes
(4) Short turning-radius

Lower Center of Gravity

Beyond doubt, the future bus will be low hung. The inherent danger in connection with any other form of construction is the possibility of overturning. Under conditions of proper operation, the hazard may be non-existent, but we have always before us the possibility of human failure. Actually the danger is much more real than apparent. The controlling element governing overturning is centrifugal force. Vehicles seldom if ever overturn as a result of high speed and sudden impacts or brake applications. Overturns are mostly invariably due to a combination of speed and turning-radius. The only reliable guarantee against this class of accident is a low center of gravity.

* * *

With the single-deck vehicle, the higher speed is a factor that must be fully taken into account. Entirely apart from the matter of safety, a low-hung vehicle has a more graceful appearance. There is less time lost in boarding and alighting, there are fewer boarding and alighting accidents, and the schedule speed can be faster. Lastly, assuming proper design, a low center of gravity results in improved riding properties.

We have found that a safe and practical height of the frame from the ground for a single-deck bus is 25 in. and for double deck bus, 18 in. The center of gravity of our type-L double-deck vehicles, with a

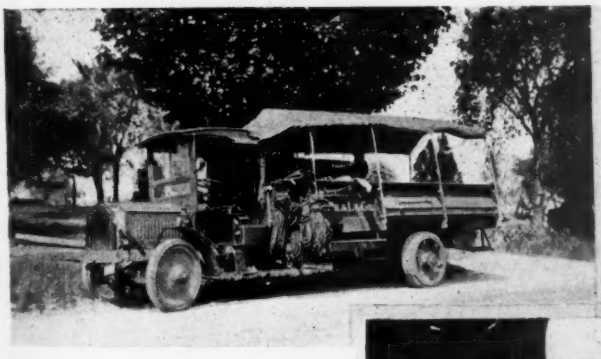
(*Continued on page 64*)

What Are You Doing About the Profitable Fields of Tomorrow?

THESE illustrations, snapped by one of our editorial representatives on one of his most recent trips, show the resumption of activities and expansion in various industrials in different sections of the country. The revival seems to be universal, extending from coast to coast. With the return of business and extension of power and telephone lines there will be a demand greater than ever for trucks of all capacities in the next few years.

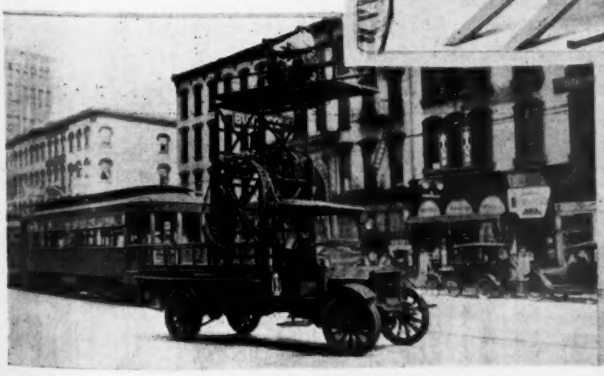
The big idea in getting some of this business is to get in on the ground floor and cultivate these lucrative outlets now. Now is the time. Waiting until the up-grade pull in business is under full way is too late. Start your solicitations now and prepare the way to the near future when new and additional equipment becomes a necessity. Build a stepping-stone. *Get the idea?*

A Detroit Telephone Truck Equipped With Power Windlass for Hauling Cable Through Underground Conduits



Above: A Fully Equipped Lineman's Truck Used by the Columbus Railway Light and Power Company. Below: A Street Car Line Repair Truck Used by the Detroit Street Car Lines

Above: Hauling Poles for the Transmission Lines. Left: Lowering a Cable Drum From a Telephone Company Truck in Detroit With Hand Windlass. Below: A Bell Telephone Company Truck in Alabama, With Power Windlass Equipped



Why Not Motor Truck Repairs on

The Flat Rate Basis?

Fundamentally the Repairing of Motor Trucks is No Different From That of Passenger Cars. Is There Any Logical Reason Why the Industry Should Not Adopt This System?

It Will Produce Satisfied Customers. This Article Tells Why

By C. P. SHATTUCK*

IT is frequently asserted by those in the truck industry, that its service as a whole is on a higher plane than that rendered by the passenger car field. The service experts know that the truck owner demands a better and more dependable service, because a truck is a business investment and any idle time is costly. It is also a fact that while the same business man will tolerate delays in passenger car service, he will not with his truck for with the latter it is a matter of cold dollars and cents.

Is It More Satisfactory?

Is the truck service really so superior to the passenger car? Generally speaking it is, if 24 hour service is the basis of comparison, but if we eliminate this factor and consider the two most important factors, namely, **satisfied owners and costs,** is the truck service as good or better than the service being rendered today in the passenger car field?

The factors, satisfied owners and costs, are inseparable. To render service that will produce satisfied owners, at a satisfactory price are the problems confronting the truck industry today. The manufacturer is vitally interested for his production is predicated upon sales, and without satisfied owners stability in sales will not be obtained. In other words, we have: Efficient Equipment times Right Prices times Satisfied Owners equals Sales. Without efficient equipment and tools, which reduce time and increase production, right prices cannot be given unless the service station is operated at a decided loss. The owner will not be satisfied if either the work is delayed or he considers the costs too high. Sales will not follow **without both of these factors functioning.**

We all are aware that one of the greatest handicaps under which service labors today is to convince the owner that the bill rendered represents 100 cents on the dollar value. It is true that some dealers enjoy the confidence of their customers; that bills rendered are accepted at face value, and paid cheerfully, but such cases are in the minority. The average owner, either directly or indirectly, is not satisfied with service **not because the work is not properly performed,** but **because he believes the costs are too high.** If he does not vociferously announce his opinion, he will at least harbor the thought that "the bill is too high," which in the last analysis builds sales resistance.

Now why isn't the owner satisfied when the statement arrives on the first of the month from the service station? Let us take an average case. When Mr. Brown bought his truck the salesman talked optimistically of low maintenance costs and the wonderful service. A great many salesmen in their enthusiasm indirectly misinform the prospect as many service managers can attest. Eventually repairs are required. Also let it be assumed that the owner is that type who pays no attention to inspection reports and comes to the service station only when dire necessity compels him.

Boy! Page the Claim Adjuster!

Consider the work carefully and skillfully performed. What does the owner consider first and last? Is it the now correctly functioning unit? If it was an engine overhaul does he declare, "How sweet that engine runs?" Does the driver go into spasms of delight over the pep? Not so. The owner **LOOKS AT THE TOTAL OF THE BILL.** He is "shocked, surprised, dismayed, etc. Why, he had no idea that he would have such an enormous bill." And his driver will yes, yes, him and suggest that the next time he would take the work to a friend of his who runs an independent shop with no fancy trimmings.

This Man Didn't Know What to Expect

Next Mr. Owner calls up the service manager. Is the bill correct? Of course it is. The service manager explains the whys and wherefores. Perhaps he may intimate what "failure of heeding advice" results in, but the owner can see but one thing, **the total of the bill,** and not obtaining a reduction writes the dealer that the bill is "excessiv, unreasonable, etc." Mr. Dealer makes an investigation, finds the charges correct, but the customer still maintains the bill is too big. The owner, to gain his point, may intimate that his next truck will be a different brand. And if the dealer is a weak sister he will make a policy adjustment. Result, loss of time for service manager, dealer, clerks, etc., and friction all around, also another deficit charged to service. An old, old, old story!

What is the Remedy?

Getting right down to the final analysis we find that the owner is not dissatisfied with the work, but because the bill is larger than he thought it would or should be. Poor work is an exception. The service, mechanically, is pretty good today in the truck field and if you think it is not, compare it with that rendered in other industries which are some years older than the automotive industry. It is the sum total of the charges, unknown, if you please, that registers.

What is the remedy? Simple enough. Advise the owner in ADVANCE—EXACTLY WHAT THE PARTS AND LABOR CHARGES WILL BE AND WHEN THE JOB WILL BE DELIVERED. Such a method can be called the "estimate in advance," "given" or "flat rate," but irrespective of the term employed, the system is the best yet devised to prevent "kicks" and all disputes

*Editor's Note.—This is the first of a series of articles by Mr. Shattuck dealing with the flat rate system in truck service. He has been conducting an investigation of the system in the passenger car industry, and in later articles will discuss the method and outline how it can be utilized in the small and the large motor truck service station or repair shop.

over charges. The "price in advance and time of delivery" method is being adopted very rapidly among passenger car dealers and in the matter of satisfied owners the passenger car industry is several jumps ahead of the truck industry.

The Pros and Cons of Known Prices

Before you say the system is not practical, Mr. Reader, with the small shop or service station, consider that this is the argument that was employed by a number of service men in the passenger car industry when the system got into its swing. These objectors claimed that it was all right for big shops with a large force of mechanics and handling many jobs, but it would never, never do for the small shop because how could the latter afford to keep the clerical force needed to secure and maintain the costs of the system? Why, it would mean charging the customer more overhead. And then they dragged in that argument of penalizing the careful owner for the shortcomings of the careless man.

These arguments were brought up in the factory service managers' conventions, and at local service association meets and the best answer to them all is that those who argued the loudest, hardest and longest against the system **are today the greatest boosters for it.** Why? Because they made an unbiased investigation, tried it and found it intensely practical.

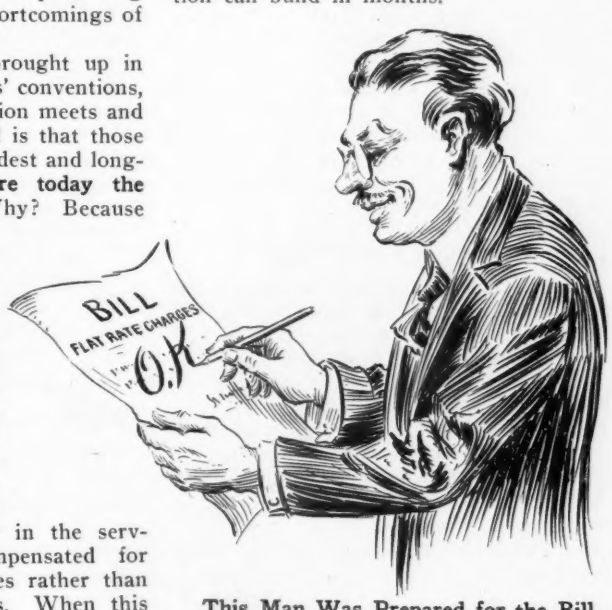
Not the Ultimate System

The writer is on record as stating that it is the best yet devised. It may not be the ultimate service system as eventually service will be on a production basis or some system whereby the skilled and efficient mechanic, the real worker in the service station, will be compensated for what he really accomplishes rather than on an hour or wage basis. When this condition obtains, costs to the owner will not only be materially reduced, but the labor problem will cease to be a problem for there will be an incentive for the young man to fit himself for the service field. Progress in the so-called piecework is being made today in the passenger car industry.

The greatest advantage of the flat rate system is that the driver or owner knows exactly what the work will cost and when it will be delivered. Inasmuch as the system involves operations, based on a definite time, the work is planned or routed through the shop, enabling the foreman to know when the work will be completed. So when the owner receives his bill he cannot be "surprised, dismayed, shocked, etc.," because he knew the price. He has affixed his signature to an order. There is no argument, either with the service head or dealer organization, no waste in "policy adjustments." The only kick the customer can make is because of unsatisfactory work. That could be his only come-back.

Builds Not; Tears Down

My observations of the flat rate system in the passenger car field obliges me to arrive at the conclusion that it has been adopted largely because of the influence of satisfied owners on new sales. One of the most active builders of sales resistance is that type of owner who arrives at his own figures for repairs, and when he gets the bill, either kicks loud and long or mulls over it. He pays, of course, but with the firm conviction that he has been shaken down. Unless he can be sold on the fact that he has been given a square deal he will next try the independent shop. Also he is prone to airing his alleged grievances to his friends and acquaintances. And while he is knocking he takes a few hard wallops at the brand of car. He builds sales resistance for the car among new prospects. Listen to any group of owners discussing their maintenance and repair bills. The satisfied owner is a booster for his car or truck. The other type—well, he tears down in a few minutes more than a good organization can build in months.



This Man Was Prepared for the Bill

Service, repairing, call it what you will, is nothing more than merchandising a necessary commodity. The basis of all selling is a quality product plus a reasonable price. There is no logical reason why the owner of a truck should be informed of a lengthy list of needed work and not be **informed in advance what it will cost and when it will be ready,** at least in the majority of the operations involved in service. There are some repairs where the final price cannot be given until the unit is disassembled and the nature of the fault determined but with the bulk of the operations, or repairs, the price can be given in advance.

Sales Predicated on Service Costs

Service in the truck field will, eventually, be highly competitive. The dealer with a modern service station, equipped with time and labor saving tools, machines and devices which reduce the time and cost of an operation, will be able to sell motor highway transportation at a less cost per ton mile, etc., than the dealer who services on the material and time basis. The prospect for the truck in the future, new or old, will buy on ultimate costs, and known costs. The pendulum in the industry is swinging towards a real basis for computing costs on parts and labor. The dealer's salesman will sell on costs and included in his cost quotations will be SERVICE COSTS. The buyer in the small town will be as keenly interested to know whether the Green truck service costs are less than the Brown, as the purchaser in New York. The salesman who can prove to the prospect the lowest service costs over a given period and miles, will get the signature to the contract. And the manufacturer, engineer or designer must necessarily take cognizance of the influence of service costs on sales.

Final Analysis is SALES

Transportation costs must eventually come down and to make possible cheaper haulage the service costs must be reduced if the manufacturer expects to build and the dealer to sell. Just as the manufacturer seeks to lower the price of his product by efficient productions methods so must the dealer lower his service costs. It can be accomplished by the "flat rate" or "given price system," for involving as it does time operations plus efficient equipment and workmen, it speeds up production, builds for satisfied owners and makes sales.

Do You Know How to Plan a Flat Rate System in Your Shop?

The second installment of the article on this subject by Mr. Shattuck will appear in our next issue. It will tell how to lay out the system; how to secure time records for getting at the rate; how records are kept; how the overhead is charged in, etc. Every service man and dealer should read this article, whether he expects to adopt the plan or not. It will at least give him pointers which will save money for him.

Looking at It From the Owner's Viewpoint

The Question is Whether It is Policy to Trade in Trucks Frequently to Avoid Repair Expenses or Should the Owner be Impressed With the Necessity of Figuring Upon a Stated Sum Per Mile for Maintenance Charges

By STANLEY S. SHERRIFF, Superintendent of Maintenance Armour & Company, Chicago

MANY motor companies are building up their present sales volume by encouraging the owner to trade-in his present vehicle for a new one. In other words, replacement business is the order of the day with many factories and dealers. On the other hand, a few manufacturers are recommending that their trucks be continuously maintained and repaired so that the maximum life of the truck is realized.

The writer appreciates that keen competition is encouraging the tendency to trade-in trucks before they have outlived their natural period of usefulness. Being anxious to sell wherever possible, the dealer will continuously impress upon the truck owner the advisability of trading in his present vehicle for a new one, rather than have that truck overhauled and placed in good mechanical condition. The result of this policy has been responsible for conditions of which the industry is well aware.

Prevalent Evils in Salesmanship

Undoubtedly fewer second-hand trucks would today occupy space in the dealer's establishment if the former owners of those trucks had been sold upon the necessity of a maintenance budget and also on the fact that proper care of the vehicle should commence as soon as the vehicle is placed in service. Many owners are advised by the truck salesman that the new truck will not require attention for some time, with the result that the owner becomes careless and pays little attention to the truck during its early life. Furthermore, the owner has not been impressed with the fact that the truck requires maintenance the same as any other property.

The life of the truck should be discussed with the owner. When a truck is purchased, the buyer should be convinced that the truck is a well-built product which should give continuous service for at least six years, and, barring accident, that truck should not need replacement within that time.

From long experience the writer has found that the actual repair charges which should be allowed for a truck of, say two tons is 3 cents a mile. This figure is the result of a careful check-up on a fleet of 2000 trucks employed by Armour & Co., and were it not for the installations of one or two trucks in far-removed cities, this average could be considerably reduced. He would consider this figure a safe one for any truck manufacturer to base his calculations upon.

Advantage of Cost Knowledge

The advantages of predetermining the repair cost figure, or in other words, calculating the cost on a mileage basis will be seen from the following example:

Suppose the owner buys a 2 ton truck and pays approximately $3000 for it. He operates it two or three years and then trades it in for a new truck, receiving an allowance of $800 for the old truck and paying $2200 cash for the new one. This means he pays nearly $800 a year for repairs alone, as he has traded to avoid repair expenses. Under average operating conditions no truck would cost that much for maintenance in a year.

Contrast this with the 3 cents per mile repair charge cost which the owner would set aside for this purpose. Suppose the owner ran the truck 30,000 miles, at which mileage it would be entitled to $900 for repairs. If the truck could be put in good mechanical shape for less, his investment would be paying him above the expectations of the manufacturer, and instead of being an expense it would prove economical for the owner to keep it in repair by watching his operation costs. This, I believe, would encourage him to wear out his truck in a reasonable period of time, say eight years, or perhaps even longer.

This would benefit the owner to this extent, that he would realize the saving of the difference between the allowance for repair charges, amounting to $900 and $2200 cash for a new truck. He would save $1300 every three years, minus about $300 for depreciation, or $1,000. In nine years this would amount to $3,000, or the purchase price of a new truck, besides the interest on his money.

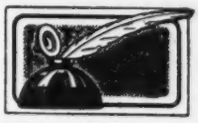
Motor Transportation is an Investment

The old trucks would go to the scrap pile just like old boilers and stoves. The money which the manufacturers would otherwise have tied up in second-hand trucks could be used to experiment with, and perfect and promote his service. The result would eliminate a great deal of the distrust between the sales departments and the owners, as well as reduce the number of the service departments which have been questionable, as no dealer could afford to have his product cost more to operate than a competitor. Also future sales would be on a performance plus sales talk, and the owner would come to look upon his motor transportation as a real investment.

To Coerce the Merry-Makers of the Annual Outing of the Philadelphia Motor Truck Association to Ensemble for the Above Sitting Required the Tact of an Expert Photographer

The participants numbering approximately 150 indulged joyfully in various forms of sport on the cool picnic grounds of the Old Mohican Club on the Delaware. Topped off with a dinner in the club house interspersed with musical selections by the band, the outing proved a complete success.

EDITORIALS



Promises Must be Specific

TOO often the dealer is placed in a serious predicament because someone in the organization has made a promise which he cannot fulfill. Perhaps the salesman, when closing a deal, especially with a new truck owner, has unintentionally stated that the truck will be kept in good shape for the owner for the next nine months. In other words all the owner has to do when something goes wrong is to send the truck around to the service station and it will be fixed up. In a word, the owner is given the impression that the dealer is a good sort of fellow who doesn't mind spending his money freely.

With the exception of replacing broken parts, or, in other words, living up to the factory guarantee, the dealer should specifically state what the limit is in connection with tuning up and the making of minor adjustments. A great deal of time is wasted in many service departments doing work which is not profitable, but which must be done gratis to keep the goodwill of the customer.

Promises made in connection with repair jobs should be treated seriously. In many cases the service station manager will promise a job at a given time, knowing full well that the job cannot be turned out on time. The usual excuses are given, but the impression left with the owner is very bad. The shop that is ready to deliver the job on the minute promised cannot help but make a reputation for itself. In this respect the flat rate system will do much to produce promptness, because, unless the work is efficiently scheduled, the flat rate system will not accomplish the results desired.

The Price the Dealer Pays

IT is not always the manufacturer who is guilty of charging exorbitant prices for parts. In the truck field particularly there has been a decided improvement in the parts situation and the manufacturers are doing everything possible to improve conditions for the user. Many instances have been investigated recently by one of the industry's leading associations, where the complaint was made that the charge for parts was exorbitant, and it was found that in practically every case the dealer had charged in excess and in a few instances more than double the list price stipulated by the factory.

In most of these instances the parts came direct from the factory on order especially for the user who complained, leaving absolutely no reason for the dealer to complain that he must have a larger profit to cover his overhead. It is a well known fact that some factories are dropping dealers because they will not stand for the abuse of the owner in this manner.

The dealer must, of course, be expected to make a profit on selling parts, but under no circumstances should the parts department be expected to pay the overhead of the rest of the dealer's establishment. Parts should be sold at the lowest possible cost. The price the dealer pays is not the price he actually pays for the parts and the profit he realizes from the sale thereof, but the price he pays in lost customers—in other words, the loss of the repeat order in the truck sales department.

What the Railroads Should Do

RAILROAD officials declare that the recent reduction in freight rates ordered by the Interstate Commerce Commission spells failure for many of the short haul roads of the country. It is asserted also, that some of them would have had to discontinue operations even though no cut in rates had been ordered. This conclusively proves that high rates alone in connection with short haul roads would not help the railroads, because even if the rates were materially increased, the volume of freight carried would be less because shippers would naturally turn to the cheaper medium—the motor truck.

The motor truck is the logical short haul medium. A few years ago the railroads were anxious to get rid of the short haul freight and voiced no objection to the motor truck handling this business. Have the railroads forgotten the embargoes which were ordered during that time? Long hauls by motor truck were not uncommon during those days—but only the over-enthusiastic, or the uninformed individual, saw visions of the motor truck competing with the railroads on long hauls. That business belongs to the railroads.

But for the short haul the motor truck has become indispensable. What the railroads should do is to co-ordinate their efforts in such a way that the result will be of greatest benefit to the consuming public. The shipper and the man who pays the freight charges are the ones who are most affected. Every business man knows that the transportation charges on either the raw material or the finished

thing he has undertaken and whose great experience in conducting the largest manufacturing operations will insure the success of our undertakings."

In the organization of the corporation complete title to the plants and all assets of the constituent companies are owned in fee simple by the central corporation. The financing of the merger is most conservative. None of the securities offered are for plant betterment, as all the plants are in first class operating condition now.

One of the most important innovations introduced in the automobile field by Associated Motor Industries is a $35,000,000 fund set aside for financing its dealers. This fund will be increased in following years, if necessary. In fact the bankers' syndicate interested in the plan has let it be known that they will authorize the use of up to $100,000,000 for this purpose at any time it is called for under the specified conditions.

By the dealers' financing plan 90 per cent. of the dealers' liquid working capital will be provided. Roland A. Crandall & Company, Investment Bankers, of Chicago, have worked out the details as a result of many years' experience in financing sales. The plan makes the dealer an integral part of the corporation, carries his financial burden for him and furnished the most effective aid to his sales efforts.

All operations of Associated Motor Industries will be directed by Mr. Ohmer from the central offices in Dayton. The plants in the different states are being equipped with radio for instantaneous communication at all times with the main office. No other business organization has ever made such an extensive use of radio.

Louis Ruthenburg, president, in general charge of production, resigned from General Motors to join Associated Motor Industries. He was manager of the Delco plant of General Motors and manager also of the manufacturing division of the General Motors Research Corporation.

R. W. Walker Purchases Ward LaFrance

The Ward LaFrance Truck Corp., Elmira, N. Y., which was placed in an equity receivership some months ago, has been sold by the receivers. The property was purchased by R. W. Walker, president of Walker Motors, Inc., New York City.

The Elmira plant is to be removed to New York where this line of trucks will be manufactured particularly for the New York market.

The truck will be known as the "Walker-LaFrance." It is understood that no radical changes will be made in design or construction, and that the truck will be made very much along the lines of the Ward LaFrance.

A. Ward LaFrance, formerly president of the Ward LaFrance Truck Corp., will be associated with Mr. Walker, and in charge of production. It is stated that the purchase in no way has any connection with the American LaFrance Fire Engine Co., of Elmira, manufacturers of fire apparatus.

Torbensen States Parts Service Policy

The following statement of policy in reference to the establishment of parts service stations in various parts of the country by the Torbensen Axle Co. has just been given out:

"Our reason for establishing these parts stations has been:

"First—To lessen the time in which it takes to get a genuine Torbensen replacement part when a truck is down waiting for Torbensen parts.

"Second—To make genuine Torbensen parts so readily attainable that users will not have any excuse for using pirate parts.

"Third—To have a complete line of Torbensen parts in each territory, which are readily accessible to dealers handling trucks Torbensen equipped, so that they can assure their users of immediate service on replacement parts without the necessity of investing thousands of dollars in repair parts stock.

"Fourth—Maintain our list price and thus prevent excessive charges for repair parts, which has been one of the serious troubles in keeping the truck owner sold.

"At the present time we have closed up quite a few representatives throughout the country and hope to have the complete territory covered within the next three or four months. When our entire list of distributors has been closed we will have in the neighborhood 20 or 25 main distributing stations and 100 sub-stations."

Stephenson Heads Indiana Truck Corporation

J. W. Stephenson, recently executive vice-president and general manager of the Indiana Truck Corp., Marion, Ind., has been elected to the presidency of that company by the board of directors. He takes the position left vacant by the death of Charles G. Barley, founder of the Indiana company.

Mr. Stephenson's experience with the corporation covers the treasurership of the company where he served for several years, later the vice presidency and the position he occupied just before his recent promotion. He has always been in close touch with the concern's affairs, being a large stockholder and having the privilege of working with the deceased president in all matters of administration.

The death of Mr. Barley took place at Marion, Ind., June 11, after an illness covering two and one half years. Beside being connected with the Indiana Truck Corp. he was interested in a number of concerns in Marion. He was one of the pioneers of the truck industry and was continually interested in its improvement and advancement. His associates knew his life to be an example of inspiration, charity, truthfulness and integrity.

Approximately 90 per cent of the milk consumed in Los Angeles, 75 per cent of the bread and 500,000 pounds of fresh meat daily are delivered by motor truck.

Hartford Auto Parts Reorganized

The Hartford Auto Parts Corporation has just been incorporated under the laws of the State of Connecticut, and will continue to manufacture universal joints at its plant at Hartford, Conn. This new company is the successor to the former Hartford Automotive Parts Co. of Massachusetts, in Receivership, for the past two years.

The property was purchased at a recent receiver's sale by order of the Court and the Creditors' Committee bought in the same and have now turned over the property to the new management.

The new corporation is incorporated for $330,000 Preferred stock and $100,000 Common stock. The organization consists of P. D. Hawkins, General Manager; A. L. Perkins, Sales & Service; C. F. Kalish, Engineer; G. H. McComb, Superintendent, and the Detroit sales representative is A. C. Chambers, Book Bldg., Detroit, Mich.

The capacity of the new plant and equipment is approximately 20,000 joints per month.

New Corporation to Make Atlas Axle

A combination of interests of the American Machine Co., Newark, Del., and the Lobdell Car Wheel Co., Wilmington, Del., has resulted in the formation of a new corporation for the manufacture of the Atlas axle. Ample resources and greatly increased production facilities will make possible excellent service and output.

For the immediate present, production will be confined to the various models of the special motor bus rear axle designated as the LC series. This is a specialized design incorporating a one piece cast housing of box girder section offset from the wheel spindles, thus providing a very low spring mounting.

The directors of the new Atlas Axle Co. are: Joseph Stuart, J. Bayard Hearn, Howard L. Seaman, representing the Lobdell Car Wheel Co. interests, and Richard A. Whittingham, George H. Whittingham and Charles R. Durling, representing the American Machine Co. interests. The capitalization is $500,000. At the first meeting of the board of directors officers were elected as follows: President and general manager, Joseph Stuart; vice-president and sales manager, Richard R. Whittingham; secretary and treasurer, H. Lodbell Seaman. R. A. Whittingham, who was responsible for the original Atlas design, remains as chief engineer.

Record Haulage of Live Stock by Motor Truck

All former records of receipts of livestock by trucks for one day were broken recently at the Omaha, Nebr., stockyards. The final count showed that 229 cattle, 46 calves, 2267 hogs and 710 sheep were brought into the yards in trucks.

product add greatly to the actual cost to the consumer. Any way in which the transportation cost can be decreased will eventually help to increase the amount of goods transported. Many commodities are not now shipped from one part of the country to another, because the transportation costs are excessive. In connection with long hauls, too much unnecessary handling is done at terminals which could be eliminated if the railroads would thoroughly study the possibilities that the motor truck affords. It must not be inferred from this that the railroads are not studying the problem. On the contrary some of the largest roads are closely watching the developments and perhaps before the year closes some surprises will be forthcoming in the nature of wholesale purchases of motor trucks by the railroads.

The use of demountable truck bodies which can be placed upon flat cars and vice versa has only started. Wherever the system has been inaugurated it has met with instant favor and the plan is spreading rapidly. It is by close co-operation with the motor truck industry that the railroads can efficiently increase and improve their long haul freight lines. Co-ordination of effort on both sides will give this country a transportation system which will not only stimulate business in general, but at the same time realize a satisfactory return on the capital invested.

News of the Trade in Brief

W. I. Ohmer Heads Associated Motor Industries

ASSOCIATED MOTOR INDUSTRIES, the merger which has just been perfected by makers of seven different cars and trucks, has organized its central offices at Dayton, Ohio, and is pushing work rapidly ahead to get into full production. Nine manufacturing plants in seven states, with five assembling plants, fourteen in all, are included in this first group of Associated Motor Industries.

Additional companies soon are to be taken into the merger, it is said.

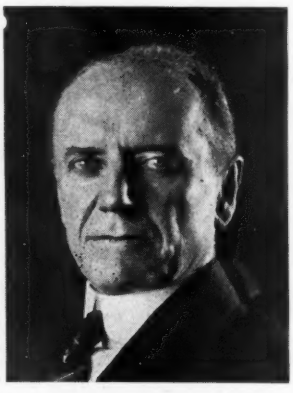
Will I. Ohmer, of Dayton, Ohio, whose plant is one of the largest making ignition systems, is chairman of the board.

Associated Motor Industries will continue to produce the cars and trucks at present made by the member companies, including Jackson automobiles and Jackson Four Wheel Drive Trucks, the Dixie Flyer auto, Old Hickory truck, Traffic Trucks, and the cars and trucks now made by the National Motor Car and Vehicle Corporation. The line thus includes a four, a light six, a de luxe six and a full line of trucks for all purposes.

In addition there will be a large surplus of parts and equipment that will be sold to outside manufacturers at prices sufficiently attractive to insure the disposal of the entire output, thus maintaining full speed production by all plants at all times.

Following are the manufacturers included in the "first group" of Associated Motor Industries. Other manufacturers soon are to be taken in and their names are expected to be announced within a short time:

National Motor Car & Vehicle Corp., Indianapolis, Ind., manufacturers of National cars and trucks; Covert Gear Co., Lockport, N. Y., manufacturers of all types of transmissions, clutches and controls for passenger cars and trucks; Recording and Computing Machines Co., Dayton, O., manufacturers of ignition systems, magnetos, starters, battery systems and generators, scientific research plant; Jackson Motors Corp., Jackson, Mich., manufacturers of Jackson automobiles and of Four Wheel Drive trucks; Kentucky Wagon Manufacturing Company, Louisville, Ky., manufacturers of the Dixie Flyer automobile, the Old Hickory truck, automobile wheels and truck bodies; Saginaw Sheet Metal Works, Saginaw, Mich., manufacturers of all sheet metal parts for automobiles and trucks; Traffic Motor Truck Corp., St. Louis, Mo., manufacturer of Traffic Trucks; Murray Tregurtha Corp., Boston, Mass., manufacturer of gasoline engines; H. F. Holbrook Co., New York, N. Y., manufacturer of automobile bodies.



Will I. Ohmer

The officers of the Corporation are announced as:

Chairman of the Board, Will I. Ohmer; president, Louis Ruthenburg; vice-presidents, A. A. Gloetzner, Robert V. Board, T. C. Brandle, George M. Dickson.

Board of Directors: Chairman, Will I. Ohmer, president The Recording and Computing Machines Co.; Robert V. Board, president, Kentucky Wagon Manufacturing Co.; A. A. Gloetzner, president, Covert Gear Co.; James R. Duffin, president, Inter-Southern Life Insurance Co., Louisville, Kentucky; Louis Ruthenburg, formerly general manager of Delco Plant of General Motors Corp.; H. G. Stoddard, treasurer, Wyman-Gordon Co., Worcester, Mass.; H. V. Hale, general manager, Saginaw Sheet Metal Works; H. J. Linkert, treasurer, The Recording and Computing Machines Co.; C. L. Halladay, vice-president and general manager, Jackson Motors Corp.; W. W. Sterling, vice-president, Jackson Motors Corp.; C. L. V. Exselsen, vice-president-treasurer, Roland A. Crandall & Co., Bankers, Chicago, Ill.; Guy Wilson, president, Traffic Motor Truck Corp.; T. C. Brandle, vice-president in charge of merchandising, Traffic Motor Truck Corp.; G. M. Dickson, president, National Motor Car & Vehicle Corp.; Buell Hollister, Pyne, Kendall & Hollister, Bankers, New York City; H. F. Holbrook, president, H. F. Holbrook, Inc.; M. Douglas Flattery, chairman of board of Murray-Tregurtha Corp.

The statement issued by the Board of Directors in announcing Mr. Ohmer as chairman in full charge of operations reads as follows:

"Will I. Ohmer is well known throughout the automobile field as a manufacturer whose product represents the most advanced methods known to industry. In placing Mr. Ohmer at the head of Associated Motor Industries we avail ourselves of the skill and wisdom of a manufacturer who has made a success of every-

Personal Items

C. H. Bliss has been appointed assistant sales manager of the Nash Motors Co., to succeed W. W. Smith, who has been awarded a direct factory distributing contract at Oklahoma City. The advancement of both Mr. Bliss and Mr. Smith comes as recognition of their respective records.

H. H. Brenner, well known in automotive equipment circles for many years as general sales manager of the J. J. Cooper Rubber Co., has recently been succeeded in that capacity by R. B. Crane, director of sales. Mr. Brenner retains his interest in the Cooper organization, but is giving his personal attention to his own company, the Brenner Automobile Supply Co., with stores at St. Louis and Kansas City, Mo.

A. G. Cameron has been appointed manager of the Export Co., of the Goodyear Tire & Rubber Co. He has been with the company almost 10 years. He was at one time manager of the Australasian division and later became export sales manager.

Jack Cooper, in addition to representing the Walker Manufacturing Co., has become sales director of the E. A. Laboratories, Brooklyn, to succeed William Von Elm, who has resigned after three years' service as vice-president and sales manager.

F. C. Dumaine, treasurer of the Amoskeag Manufacturing Co., has been elected a director of Mack Trucks, Inc., succeeding E. R. Hewitt, resigned.

A. C. Frank, formerly foreign sales manager for the Firestone Tire & Rubber Co., Akron, has opened his own office at 299 Broadway, New York City, to act as export representative for manufacturers' automotive products and kindred lines. The Service Motor Truck Co., Wabash, Ind., has intrusted their foreign business to him and it is expected that other manufacturers will also do so.

R. S. Gildart, former director of publicity for the American Malleable Castings Association, Cleveland, has been appointed advertising manager of the General Fireproofing Co., Youngstown, O.

William F. Hedges, prominent tire dealer of Fort Wayne, Ind., has been made manager of the Middle States branch of the Hydro-United Tire Co., located at 3617 South Ashland Ave., Chicago. He has been connected with the tire industry since 1913.

Frank J. Jarosch is connected with the Jarosch Bearings Corp., who are sole importers of F. & H. ball bearings, manufactured by Fries & Hoepflinger, Schweinfurt, Germany. Mr. Jarosch's former connections were with the Gurney Ball Bearing Co., Jamestown, N. Y., and the Bearings Company of America, Lancaster, Pa.

H. Tyler Kay has resigned from the Madison Tire & Rubber Co., Buffalo, N. Y. He has been with the company since its beginning, and since the first of the year has had charge of sales as well as advertising and sales promotion.

W. J. Keegan, who has spent five years at the factory of the Perfection Spring Co., Cleveland, O., principally on jobbers sales and taking care of customers' interests, is to take the road for that company. He will travel principally in the southern territory.

V. K. McBride, who recently resigned as district sales manager of the Garford Motor Truck Company of Indiana and Kentucky, has been appointed an assistant in the Indianapolis district of the Maxwell Motor Corp. Mr. McBride was with the Garford Co. for three years. His experience covers 16 years in automotive trade.

Charles T. Peck, Jr., who has been with the Traffic Motor Truck Corp., St. Louis, for more than three years, has been made general sales manager of that company. He was at one time manager of the New Business Dept., and later assistant general sales manager.

Robert H. Schaefer, who for several years has been a member of the sales department of the Tuthill Spring Co., has severed his connections with this firm and contemplated engaging with his brother, William H. Schaefer, who is representing the Tuthill company and other concerns at 79 Walker St., New York City.

Floyd H. Smith, formerly with the Pierce-Arrow Motor Car Co., Buffalo, N. Y., as director of purchases, has become associated with the Simms Magneto Co., of East Orange, N. Y., as assistant general manager. Mr. Smith's many years' experience in the automobile and motor industries specially fits him for the position he has assumed.

C. A. Wetherbee has recently been appointed general sales manager of the Eagle Motor Truck Corp., of St. Louis, Mo., manufacturer of Eagle motor trucks. He was with the Garford Motor Truck Co., as district and branch sales manager of its St. Louis branch.

Removals and Trade Changes

The South Main Motor Co., 207 South Main St., Pittsburgh, Pa., has taken over the manufacturing business of the Niles Motor Truck Co. The firm will continue to manufacture the Niles truck.

The Packard Engineering Co. announces the removal of its offices to a new location at 1200 West 76th St., Cleveland, O. Its former address was 1740 E. 12th St.

The Jeavons Manufacturing Co., a new concern at Cleveland, O., has taken over the distribution and manufacture of Jeavons spring lubricators, formerly made by the Jeavons Co. Frank N. Sealand is president and James T. Ward, secretary and treasurer.

The White Co., St. Louis branch, has moved into its new home at 4151 Forest Park Blvd. The branch is under the management of F. H. Squires.

The Beckley-Ralston Co., of Chicago, jobbers of automobile accessories, have begun work on the erection of a new building in St. Louis, Mo. The branch is now at 1903 Locust St., and is under the supervision of George Amerman.

The Barton Motor Co., Ford dealers of Burlington, Iowa, has opened its new service station and general offices. This firm is one of the progressive concerns of the West and is thoroughly sold on the value of advertising.

The Miller Rubber Co., Akron, O., has sold its Akron and Canton tire service stations to the Instant Tire Service Co., an Ohio corporation. The new company acquires the entire fleet of service cars in both cities and continues the tire service offered local motorists.

The Black & Decker Mfg. Co., builders of portable electric tools, announces the establishment of a new Detroit office in the General Motors Bldg. C. G. Odell, assistant to president, will use this office as his base, in addition to which it will provide headquarters for the local Detroit representative.

The Cleveland Pneumatic Tool Co. has secured manufacturing and sales rights for Gruss air springs, a device which utilizes cushions of compressed air to absorb road shocks and vibrations. They have been manufactured for several years by the Pneumatic Cushion Co., of San Francisco. The device can be used on passenger cars, trucks and motor buses.

Factory News and Capital Increases

The Goodyear Tire & Rubber Co. recently celebrated at its plant in Akron, the completion of its 45,000,000th pneumatic tire for motor vehicles. The tire is to be exhibited in the company's branches.

The Youngstown-Republic Rubber Corp. will close the first half year without operating loss. It has been making substantial expenditures preparing its plant for larger production. The company is turning out 1800 casings daily and is said to be behind in its shipments.

The Amazon Rubber Co., Akron, O., reports that production is running at 85 per cent of the total capacity of the plant and that orders are on hand to such an extent that it is imperative that production be increased immediately.

The Martin-Parry Corp. is now negotiating for greater service and distributing facilities in various parts of the country. Expanded service facilities are now under way at Omaha, Salt Lake City and Denver. A plant was recently acquired at Lumberton, Miss.

New Incorporations

The Anderson Spark Plug Corp. has been incorporated at Dover, Del., to manufacture and sell spark plugs. It is capitalized at $500,000.

The Madden Co., of Dover, has been granted articles of incorporation to manufacture and sell automobile accessories at a capitalization of $150,000.

The Roberts Piston and Automatic Ring Co., Wilmington, Del., has been formed and incorporated under the laws of Delaware to manufacture and sell piston rings and other mechanical devices.

The Pep Mfg. Co. has recently been organized to take over the manufacture of Pep, the water-mixed valve grinding compound, from the former Worcester Abrasive Co. The new company has established offices at 33 West 42nd St., New York. Ralph Root is president and Chas. J. MacNutt, secretary and treasurer.

New Agencies

The Wisconsin Motor Manufacturing Co., of Milwaukee, has opened a branch office at 715 Discount Bldg., Cleveland. The firm will handle Wisconsin motors and parts for Ohio and vicinity.

The Sutter Auto Electric Co., of 315 N. Sutter St., Stockton, Calif., has been appointed Gill battery dealers for that city.

The Flynn-Guenther Co., St. Louis, Mo., and Kansas City, will control the distribution of "Tiger Foot" tires, made by the Standard Tire Co., Willoughby, O., for the territory of Arkansas, Oklahoma, Kansas, Nebraska, Missouri and Illinois.

Miniger Now Sole Owner of Auto-Lite Company

Business, plants and all assets of the Electric Auto-Lite Corp., manufacturer of starting, lighting and ignition systems, have been purchased by Clement O. Miniger and his associates at a public sale recently for approximately $5,000,000. Confirmation of the sale by the Federal Court means the completion of the transaction and the divorcement of Auto-Lite from the Willys Corp., of which it has been a large unit for years.

A new corporation bearing the corporate title of the Electric Auto-Lite Co., has been organized under the laws of Ohio to take over the property. Mr. Miniger will be president and in sole and absolute control of the company.

Mr. Miniger was one of the incorporators of the company eleven years ago and has been its executive head from the beginning. In that time, under his leadership, production has increased from 100 lighting and starting units a month to more than 5000 a day. Today's production is at the rate of 500,000 to 600,000 complete units a year.

The three plants of the company at Toledo, O., Poughkeepsie, N. Y., and Fostoria, O., afford approximately 600,000 sq. ft. of floor space.

West Haven Rubber in Production

The West Haven Rubber Co., which recently acquired the plant of the Kelley Tire & Rubber Co. at West Haven, Conn., has started operations at the former Kelley plant. The new company, which was incorporated under the laws of the State of Connecticut, May 17, for $200,000, will manufacture the "Connecticut Cord." The output in this line is now said to be 100 per day, ranging in size from 30 x 3½ to 37 x 5. A production of 200 a day is expected within the next month.

George F. Armstrong, president of the company, and also head of the Armstrong Rubber Co., Garfield, N. J., is directing sales work for the West Haven company. Frank Walsh is superintendent of production.

N. A. C. C. Library of Inestimable Value

A most valuable aid to automotive engineering in this country has been the development of a Patent Department with the National Automobile Chamber of Commerce. This department beside handling a collection of data on 200,000 automobile patents has collected a specialized library which covers almost every phase of automotive progress.

Periodical publications pertaining to motor vehicles have been collected and bound, some sets dating back 25 years. Text books, in foreign languages as well as in English, are in the collection.

The complete system of cataloging has been devised and a trained corps of experts under the supervision of W. L. Powlison, chief librarian of the N. A. C. C., are available for furnishing information on a variety of subjects pertaining to the automotive field.

Double Dividend for Black & Decker

The Black & Decker Mfg. Co., Towson Heights, Md., announces a double dividend for the second quarter of the year, making the payment 4 per cent instead of 2 for the period ending July 1, 1922, to all stockholders of record as of that date.

D. Kirke Moore is Appointed by C. A. Dana

C. A. Dana has announced the appointment of D. Kirke Moore as supervisor of sales for all the automotive divisions of the Dana Group. This group now includes the Spicer Mfg. Co., Sheldon Axle & Spring Co., Parish Mfg. Co., and the Salisbury Axle Co.

Mr. Moore has had considerable merchandising experience throughout the trade, serving such well known companies as the Weston-Mott Co., Northway Motor and Mfg. Co., Jackson, Church & Wilcox, the Western Spring and Axle Co., and the Standard Parts. He was one of the organizers of the American Distributing Co.

Goodyear Experiments With Eight-wheel Bus

An eight-wheel passenger bus, which is said to possess a successful application of an air brake system similar to that used on street cars and railroad trains, has been developed by the engineers of the Goodyear Tire & Rubber Co., according to recent announcement. The model is the original Goodyear six-wheel passenger bus remodeled.

Several More Reductions

Motor truck companies announcing reductions in the past few weeks were Rainier Motor Corp., New York City; Kalamazoo Motor Corp., Kalamazoo, Mich. (1½-ton model); Stoughton Wagon Works, Stoughton, Wis.; the Tower Motor Truck Co., Greenville, Mich.; G. A. Schacht Motor Truck Co., Cincinnati, O. (7-ton model); Fargo Motor Truck Co., Chicago, Ill. (2-ton model); Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y. See specification tables for new prices.

New Cost Sheet for Truck Owners

A monthly cost record for motor trucks, which is said to enable the user to find the exact relation of earning power compared to cost of upkeep of any delivery unit, is being offered to the trade by Buxton & Skinner Printing and Stationery Co., St. Louis. The records have been simplified with a view to making the process of cost keeping easy and at the same time, accurate. Sheets can be bound in a special loose leaf holder which can be later transferred to a permanent holder.

The Board of Directors of General Motors Corp. met in New York recently and declared a dividend of $1.50 a share on the preferred stock, a dividend of $1.50 a share on the 6 per cent debenture stock and a dividend of $1.75 a share on the 7 per cent debenture stock, payable August 1, 1922, to holders of record at the close of business July 3, 1922.

Coming Events

SHOWS

July 29 to Aug. 13, 1922, Chicago, Ill. Automobile exhibition at the Second Annual Pageant of Progress Automotive Section under the auspices of the Chicago Automobile Trade Association.

August 18 to 26, 1922, Aurora, Ill. Automobile Show on the Fair Grounds of the Central States Fair and Exposition Co. Passenger cars, trucks, tractors and accessories. L. L. Fest, general manager, 57 Main St., Aurora.

August 28 to September 2, 1922, Columbus, O. Automobile show in connection with the Ohio State Fair.

September 4 to 9, 1922, Spokane, Wash. Annual automobile show held in connection with the Spokane Interstate Fair. B. J. Garnet, Mgr.

September 4 to 9, 1922, Indianapolis, Ind. Automobile and accessory show in conjunction with the Indiana State Fair, Auto Show Bldg., auspices, Indianapolis Automobile Trade Association, J. B. Orman, Mgr., 338 N. Delaware Ave., Indianapolis.

September 4 to 9, 1922, Hartford, Conn. Annual Automobile Show at the Connecticut Fair Grounds.

November 13 to 18, 1922, Chicago.. Annual Exhibit and Convention of the Automotive Equipment Association, Coliseum.

November 13 to 18, 1922, Chicago, Ill. Annual Equipment Exhibition of the Automotive Equipment Association, Coliseum.

CONVENTIONS

Buffalo, N. Y., September 13 to 15, 1922. Sixth fall convention of the Motor and Accessory Manufacturers' Assn. Hotel Lafayette. M. L. Heminway, general manager, 33 W. 42nd St., New York City.

Cedar Point, Ohio, August 7 to 9, 1922—20th Annual Convention, National Team & Motor Truck Owners' Assn.

Chicago, Ill., October 18 to 20, 1922—Convention of National Association Farm Equipment Manufacturers.

Chicago, Ill., November 13 to 18, 1922—Annual meeting of Automotive Equipment Association at the Coliseum Annex.

Detroit, Mich., August 29, 1922—Convention of the National Safety Congress.

Olympia, Wash., July 21 to 22, 1922—Midsummer Convention of the Washington Automobile Trade Assn.

Santa Barbara, Calif., October, 1922—Annual General Convention of the California Automobile Trade Assn. Robert W. Martland, Sec., Pacific Bldg., Oakland, Cal.

FOREIGN EVENTS

Berlin, Germany, September 25 to October 3, 1922—Automobile Show at the Kaiserdamm Hall, direction German Automobile Manufacturers' Association.

London, England, October 12 to 23, 1922—International Commercial Vehicle Exhibition at Olympia.

London, England, November 8 to 18, 1922 (tentative)—Olympia Automobile Show.

Paris, France, October 4 to 15, 1922—Annual Automobile Show at Grand Palais.

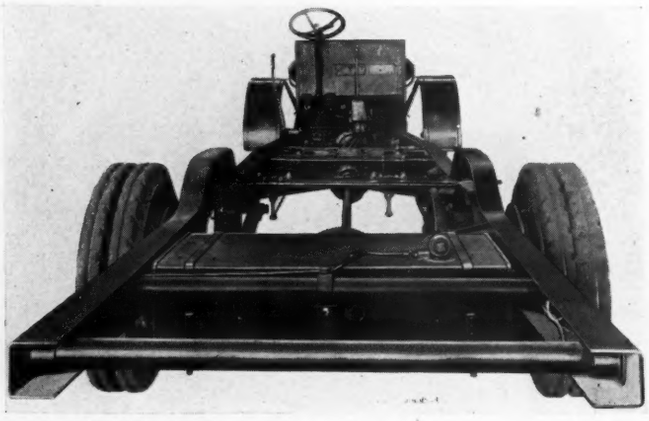
Rio de Janeiro, Brazil, September 7 to November 15—Automobile Show during International Exposition.

The Hague, Netherlands, September 15 to 20, 1922—Annual Automobile Show.

NEW COMMERCIAL CARS

Selden Places New De Luxe Motor Buses on Road

THE operation between Rochester, Brighton and Pittsford of four Selden De Luxe motor buses marks the debut of this Unit No. 52 recently announced by the Selden Motor Corp., Rochester, N. Y. These buses although just put in operation were received with much satisfaction by the public, and the residents along the route covered offered no objection, because these jobs are reported not only to be attractive in appearance but silent in operation as well. The buses travel through residential streets where street car operation is prohibited.



Rear View Showing the Kick-up and Converge of the Frame

The bodies, built by the Kuhlman Co., Cleveland, O., will comfortably seat 29 passengers and provide ample standing room if needed. The chassis design assures maximum safety and comfort together with low maintenance and operating costs. It is of the low hung type, full flexible and with the frame kicked up over the rear axle. Finally the provision of pneumatic tires and cushion wheels gives the bus the final touch of resiliency and smooth riding.

The engine is of the 4-cylinder, heavy-duty type, with cylinders cast in pairs and cylinder heads removable. A special manifold arrangement makes for fuel economy and reduction of carbon deposits. Force feed lubrication by reason of a large gear oil pump at the bottom of the crankcase, forces oil to all wearing parts. Actual brake horsepower is 48 at 1400 r.p.m. Ignition is furnished by by an Eisemann high-tension magneto. The gasoline system includes a 35-gal., pressed steel tank, secured in a compartment to the left of the driver. Gas is delivered to a 1¼ in. Stromberg carburetor through the action of gravity.

Power is transmitted from the engine to an amidships transmission through a multiple-disk, dry-plate clutch assembled in unit with the engine. The transmission, which is a separate unit, is of the sliding gear type, providing four speeds forward and one reverse, with direct drive on high. This gear set mounted on Timken roller bearings is specially geared to offset the high gear ratio in the rear axle, making for high surface speed on high and powerful hill climbing ability on low. Drive is universal with two sets of metal universal joints with tubular shafts.

Final drive is through an inverted silent worm drive, semi-floating rear axle, claimed to be especially suitable for motorbus operation. This axle is fully mounted on Timken roller bearings. Gear ratios are optional, depending upon conditions of service. The brakes are Duplex make. Elliott make front axle, drop-forged and of the conventional I-beam construction is used. Steering is through gear of the worm and wheel type. The wheel diameter is 20 in. The springs are semi-elliptic and of special proportions for passenger carrying service.

Drive is left with brake lever attached directly to the left frame side. The gear shift lever is attached directly to the clutch unit and is on the right-hand side of the driver. Spark and throttle controls are under the steering wheel, with an accelerator pedal on the floor board to the right of the brake pedal.

The cast steel hollow spoked wheels are equipped with tires of the cushion type; 36 x 4 single, front, and 36 x 4 dual, rear.

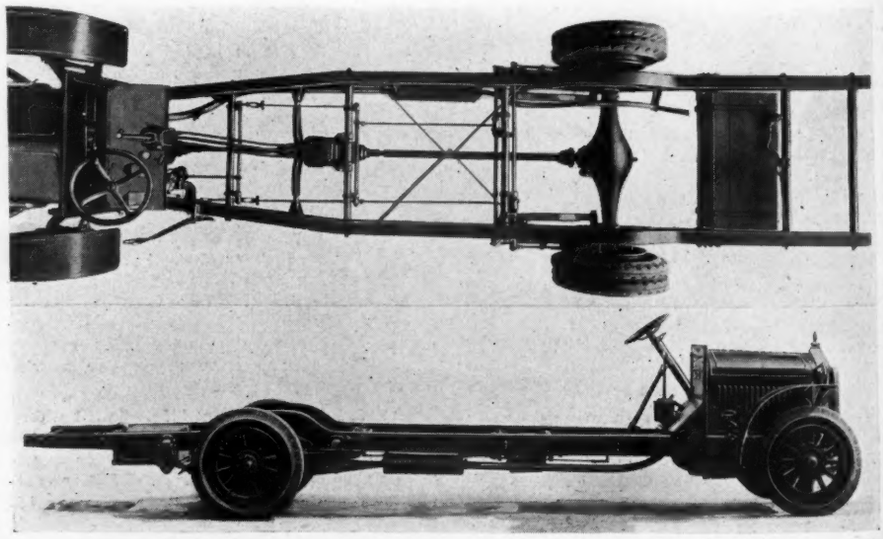
Chassis equipment includes two head lamps, tail lamp, jack, set of tools, electric horn, odometer, motometer, Alemite grease gun, and complete electric starting and lighting outfit.

The following is a brief description of the body:

The side and under sills of the underframe are of structural steel angles. Although mounted low the body allows a clearance of 14 in. above the top of the chassis frame. This allowance gives access for mechanical repairs. Side construction of the upper frame is of the truss type, consisting of pressed steel side posts. The lower side and rear ends are sheathed with light weight metal.

The roof is of the three-ply moulded veneer, covered with painted muslin. Inside the body the ceiling is finished in white enamel. Three exhaust ventilators, the openings of which are covered with a metal grill, are located along the center line of the ceiling.

A two-leaf manually operated door, folding outward and located at the forward right side of the body, provides en-



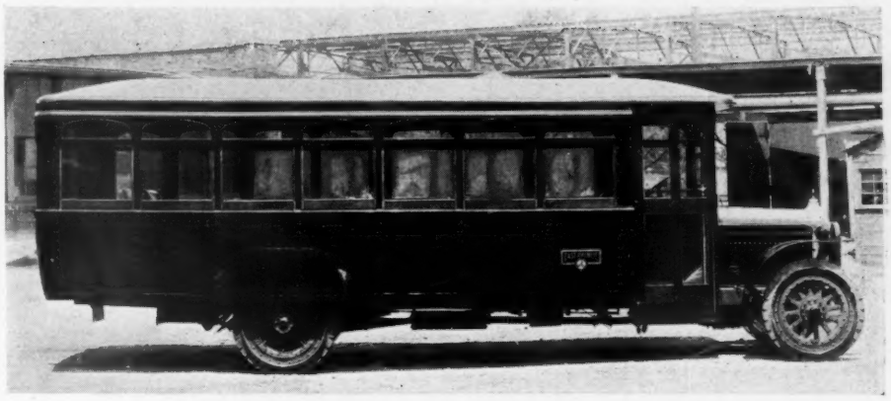
Views Bringing Out the Special Bus Characteristics of the New Selden Bus Chassis

trance. An emergency door is also provided at the left rear.

Upper sashes in the double side and end windows are stationary and lower sashes are arranged to raise 12 in. Each lower sash is provided with two lifts and automatic stops.

The seats have ventilated spring inserts and are upholstered in dark green imitation leather. The seat frames are of metal, and each cross seat back is equipped with a grab handle.

Interior finishing is in birch-stained mahogany. Five dome lights, located within the advertising rack, provide illumination. In addition, a step light is provided over the service door and the illuminated sign box is equipped with two lights.



Four of Three Selden De Luxe Buses Ply Between Three Points in Northern New York

Stewart Announces Its One and a Quarter Ton Utility Wagon

THE Stewart Motor Corp., Buffalo, N. Y., announces its new Utility Wagon. This new model is capable of negotiating grades with capacity load of 1¼ tons, and is capable of developing a speed of from 35 to 40 m.p.h. Turning radius is short.

It is empowered by a removable head, four cylinder type Buda 3⅝ x 5⅛ in. engine. The cylinder block is also removable. This engine is rated at 21.03 S. A. E. hp. The engine has a full pressure feed oiling system to crankshaft and connecting rod bearings, with oil pressure gage on instrument board. Chassis lubrication is effectively secured through the Alemite system.

In cooling, water is circulated by a centrifugal pump. Made up as one assembly unit, the water pump and its drive shaft may be readily removed as a unit or separately.

This truck has a clutch of the single-disk, dry-plate type. The engine, clutch and transmission are mounted as one unit, on three-point suspension. The transmission main shaft is mounted on annular ball bearings.

The rear-axle is a Clark internal-gear drive, the same as used on other Stewart models. It is geared 5½ to 1. The front axle is drop forge type, made from high-grade carbon steel, heat treated.

The steering gear is of the screw and nut type with an adjustment on the thrust bearings for removing any end motion of the screw that may develop.

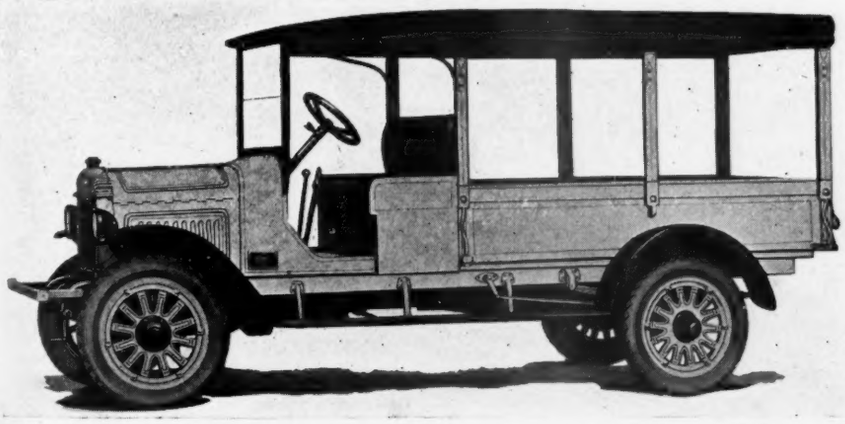
The front and rear springs are semi-elliptic in type, 38 ⅝ and 50 2¼ in. wide respectively. The rear spring has 15 leaves and is equipped with full length rebound plate bronzed bushings, and hardened steel pins are used throughout. Spring lubrication is by Alemite system.

Artillery type, 12 spokes front, 14 rear, wheels, equipped with 34 x 4½ cord non-skid tires all around are used.

The regular equipment consists of electric lights with legal lenses equipped with focusing device, electric tail lamp, tool box, 111 hour storage battery, tool jack, electric horn, oil gage, front bumper, ammeter and dash light. Chassis, hood and cowl are painted Napier green with fine gold stripe, fenders and running board black.

Price of this chassis complete with the above equipment is $1245, plus war tax, f. o. b. Buffalo.

The Utility Wagon will take open and covered express body, panel, stake, special farm grain type body, and also a covered express body with closed cab.

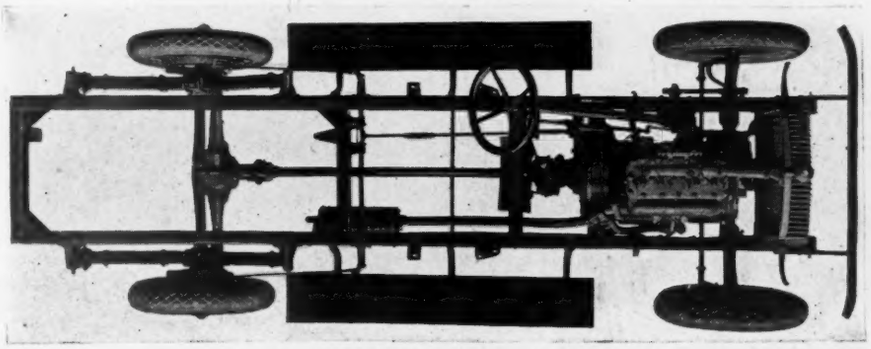


This New Stewart is Claimed to Negotiate Reasonable Grades and Travel at From 35 to 40 M.P.H.

Trucks a Factor in Wisconsin Road Building

Motor trucks are to be utilized in hauling 60 per cent of the materials from the pits to the road bed which will be employed in the construction of concrete highways in Wisconsin. Concrete highway pavement under award in this state so far this year totals 475 miles.

Wisconsin recognizes the advantages of the motor truck in highway construction and will not be caught by a shortage of cars on the railroads in carrying out her road building program.



Elevated View, Showing Disposition of Units in the New One and a Quarter Ton Stewart Utility Wagon

Nelson Develops Special Motor Coach Chassis

THE Nelson Motor Truck Co., Saginaw, Mich., has developed a new and highly special motor coach chassis. Every part of this chassis is of new design, in no part resembling ordinary truck design. The design is on the order of a large luxurious automobile. Wherein the usual truck design, the rear axle carries about 90 per cent of the load, necessitating heavy unflexible rear springs, the Nelson design gives a load distribution of 50 per cent on each axle of the chassis weight and only 60 per cent of the body and passenger load on the rear axle. This results in the road shock being effectively absorbed in the special springs provided. A brief description of this new job follows.

Chassis Specifications

Wheelbase for 21 passenger, 172 in., and for 25-27 passenger, 200 in.; chassis weight, 5300 lb.; height from ground to top of floor with 36-in. wheels, 26 in.

Clearances: Front axle, 7 in.; motor base, 8 in., and rear axle—differential, 10 in.; spring clips, 8 in.; width of frame at rear axle, 54 in.; road tread, 74 in. on wheel centers. Width overall, 84 in.; spring dimensions—rears, 58 in. x 3½ in.; fronts, 36 in. x 3 in.

The power plant is a Buda EBU coach engine 4¼ x 5½. The features of this engine are summed up as follows: Thermostat control, balanced crankshaft, aluminum crankcase, and vacuum oil control with oil pumped to all bearings. Unit power plant type transmission, with oil disk clutch, magneto ignition, two generator system, and two storage batteries and starting motor.

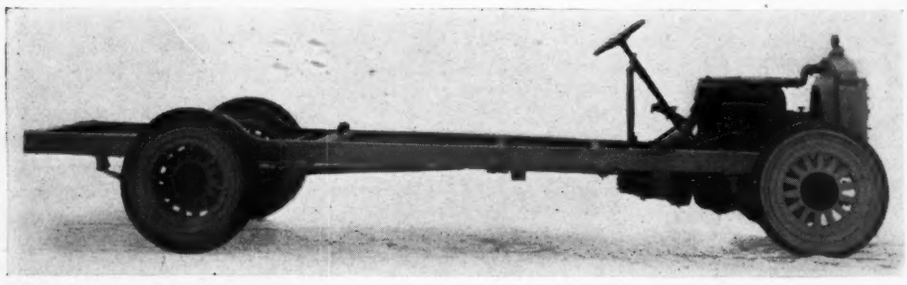
The radiator, provided with shutters for winter use, is assembled from cast iron frame and tanks, seamless copper tubing, with large oversize capacity for cooling under all conditions, and pump circulation. The rear axle is a Clark 3 D special coach axle of the internal gear drive type. A Shuler Special drop forged motor coach axle 3½ ton capacity is used in front. Power is transmitted through a three joint propeller shaft provided with a propeller shaft brake. External brakes on brake drums are used for emergency.

Springs are of chrome vanadium, consisting of a system of principle and auxiliary leaves; each leaf being calculoading points. The total possible spring travel is 8 in., allowing 3½ in. reverse under severe road shock, without striking load on bumpers.

Additional special features are listed as follows: Underslung chrome vanadium rear springs, frame arched over rear axle, with risers placed out in wheel houses; low hung body and center of gravity, flexible springs and long spring travel without hitting on bumpers, and wide frame so placed as to make one-half the frame width exactly equal to the height from the ground, thus insuring stability and freedom from side sway. The body on this chassis shown in the accompanying illustration was built by the Hoover Body Co., York, Pa. The sides are of ply metal, and the roof of Haskelite covered with duck. All mouldings are aluminum and the curved corners of the body are buffed from 14-gage aluminum. The double A plate glass of the windows are set in rubber with brass side posts. The roof construction is such that roof sag is said to have been entirely eliminated. The lighting is such as to make it perfectly easy for passengers to read. 8-32 C. P. Mazda lamps are used in the ceiling. The aisle and lobby at the rear gives plenty of room for standees, and the floor and seat arrangement at the front end reduce crowding and jostling. The properly spaced seats are commodious in size and comfortable in upholstery, good springs and Spanish leather being used. The gas tank, which is of 30-gal. capacity, is located underneath the frame at the left front corner. A gage is provided in the floor at operator's left, and filler pipe inside left front fender. This gets fuel tank on opposite side from exhaust, and away from curb when parking or stopping for passengers.

A destination sign box using combination light to denote routes, and a recognition box using selective colors of lights are furnished to suit purchaser.

In addition to 8 dome lights in passenger compartment, a dome light is provided over the driver. Besides light is provided in the sign box, light on step, and light beside fare box, as well as the usual head lights and rear lights. All wiring is in heavy insulation and all centering behind a hinged switch panel in wall at left of driver. Buzzers with flush push buttons are provided at each seat. The chassis can be equipped with either wood or steel wheels, and with solid or pneumatic tires. The wheels are equipped with Morand demountable and Goodyear all weather tread solid tires. The arrangement makes a quick change possible to pneumatic equipment, without removing wheels.



It is Offered in Two Wheelbases for Capacities of 21 and 27 Passengers, Respectively

Side Front View

Stated to be Especially Designed for Motor Coach Service

New Mack Bus Body Light in Weight

MACK shock-insulated 25-passenger bus chassis are now being equipped with a new type of body, designed and built in the factory of the International Motor Co., 25 Broadway, New York City. The new body has been designed to provide strength, resistance to vibration and weaving stresses, and a reduction in weight.

Due regard has been given to the matter of appearance, roominess and passenger comfort. The body is of conservative construction and appearance and has been built expressly for one chassis, namely, the Mack AB shock-insulated bus.

The body is of the conventional front-entrance type, with enclosed steps and collapsible leaf door, having five windows and the door on one side, six windows on the other and three in rear, all of which are of the same type. The front corners of the body are bevelled in a bay-window effect and the rear corners are rounded on a large radius. Above the windows are small transoms, and above them is a broad band beneath the eaves, which carries the louvre type ventilators. The roof is of the crowned canopy type. The middle window in the rear is carried in a concealed emergency door, fitting perfectly flush on the outside.

Within, there are six standard two-passenger cross-seats, extending back from the front of the bus to the wheel houses. Over the wheel houses, which are concealed, are lengthwise seats, accommodating four passengers each and across the back a wide cross-seat for five. The driver's seat is of the bucket type, mounted on top of the tool box.

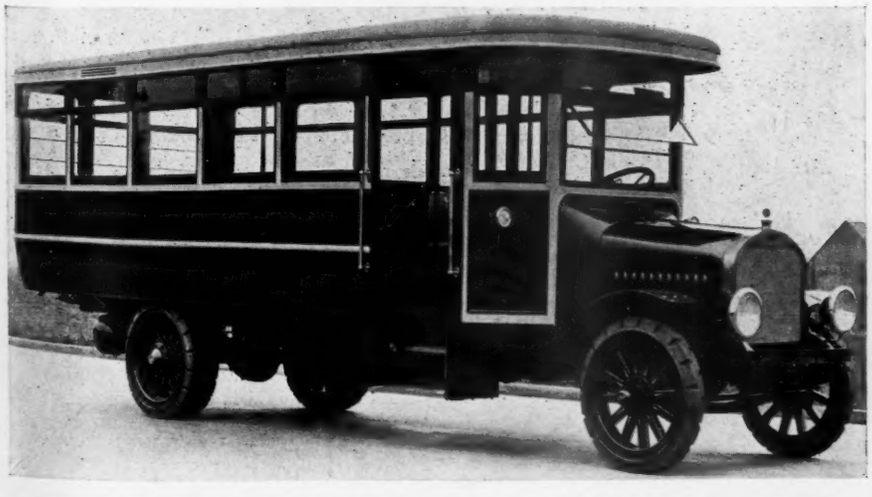
The floor is of tongue-and-grooved hardwood, laid directly across the frame and covered with cork linoleum, cemented on and bound with steel. White oak and ash framing is used, all body stanchions and roof bows being steam-bent to shape instead of sawed, as is usual. Steel gussets are used to brace the stanchions to the frame and deep pressed-steel under braces are used to support the outer edges of the body. Heavy-gage sheet aluminum is used for the sheathing. Door and window frames are of solid mahogany. Windows, which are of the lift-up type, are fitted with Edward anti-rattlers. The front door is operated by a crank to the left of the driver through overhead rods. This door is hung at the front jamb of the door, thus being semi-automatic. The emergency door at the rear is fitted with a three-way latch, the handle being inclosed in a shallow box covered with thin glass, which must be broken to open the door.

Interior of the Mack Motor Bus

Crystal plate glass of heavy thickness is used for the windshield, the frame being of metal, all panes swinging for ventilation, the upper portion being double. Over the windshield is a green visor. The body is fitted with complete wiring for lights and buzzer system, and an automatic step light. A roller sash curtain back of the driver and a large mirror for rear vision are provided. Heating is by exhaust. The heater valve is operated by a rod on the dash.

Seats are of the standard spring cushion and back type, with rattan covering. Special upholstery in leather, leatherette, whipcord or velour, with special springs, etc., is available where required, though rattan seating is generally preferred for city service. Four vertical tubular posts serve as additional stiffeners and rod supports, and as hand-holds for the passengers. In addition, each cross-seat back has a handle, sanitary type straps are fitted in the rotunda at the rear and grab handles on both sides, inside and outside the door. Advertising racks are provided above the windows.

The complete body weighs 2700 lb.



International Motor Company Offers This New Twenty-five-Passenger Bus

Standard Adds New Light Model to Its Line

In announcing its new three-quarter to one ton, model 75, worm-drive chassis at $1330 f. o. b. factory, the Standard Motor Truck Co., Detroit, Mich., declares that it is fulfilling an insistent demand for a chassis of this capacity that would be on a par with the rest of the Standard line. Like the heavier models of the line, it will contain the same combination of units that have always characterized Standard truck construction. Some of these units are Continental, Timken, Brown-Lipe, Spicer, Eisemann, Ross and Stromberg.

Power is furnished by a Continental N, having a bore and stroke of 3¾ x 5 in., respectively. Circulation in the cooling system is accomplished by a water pump. From the engine, power is carried through a Brown-Lipe multiple-disk clutch and unit power plant transmission through a two piece Spicer propeller shaft and universal joint assembly to a Timken worm-drive rear-end. The axle equipment consists of a Timken 1250 front and a 6250 rear worm. Steering is accomplished through a Ross gear.

Alloy steel springs are used. These were designed to assure ample resiliency and provide the easy riding qualities sought for to-day in a truck of this capacity. Pneumatic cord equipment on all four wheels, 33 x 5's being used, add to the resiliency of this job.

The all steel seat and riser, together with the regular Standard chassis equipment, including vacuum tank installation, complete the chassis. The wheelbase is 134 in.

Eagle Introduces New Light Model

A NEW model motor truck known as Model 101 and having a capacity of from one to one-and-one-half tons, was recently introduced by the Eagle Motor Truck Corp., St. Louis, Mo.

This Model 101 truck has been designed to meet the requirements demanded by retailers and merchants who want a quick delivery truck in city or suburban districts; for manufacturers and wholesalers who want a delivery truck combining heavy construction with speed; and it is exceptionally adaptable to the requirements peculiar to farm service.

The engine is a Buda "Buddie," a feature of which is the accessibility and the ease in which parts can be removed for inspection, repair or service. The cylinders are cast in block of grey iron, and the cylinder head is removable. Cooling is by centrifugal pump, having a large bronze runner. The pistons are grey iron and fitted with three rings. The large diameter, special steel piston pins are held in position by two positive locks. Valves are of liberal size and are operated by a single camshaft and entirely closed. The valve push rods are of special steel, mushroom type, and fitted with removable guides.

Lubrication is by full force pressure feed to all crankshaft, camshaft bearings and connecting rod bearings. Design of oil reservoir is such that any sediment which may be present in the oil will settle in the bottom. This feature insures circulation of clean oil.

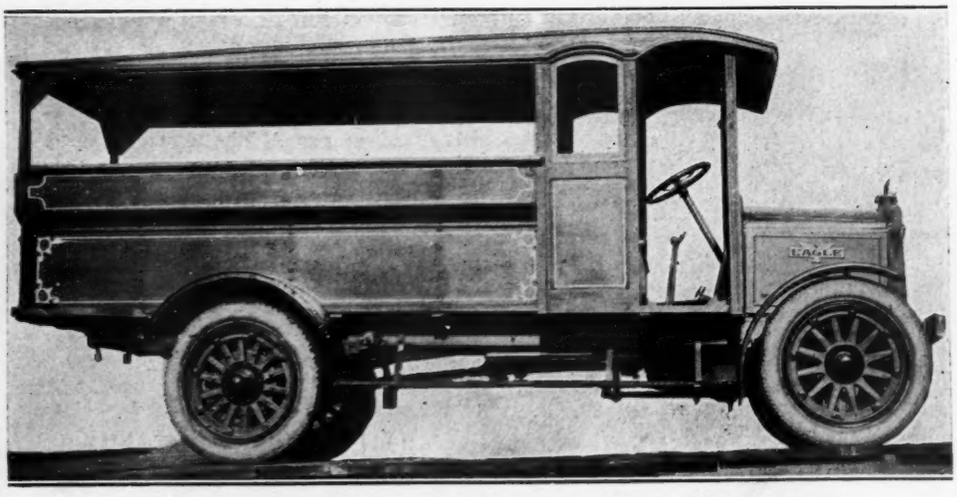
From the engine power is carried back to the transmission through a Covert dry plate multiple disk clutch. The transmission, which is of the same make as the clutch, is a sliding gear type, giving three speeds forward and one reverse. It is built to the bell housing of the engine, forming a unit power plant.

From the transmission, drive is carried back to the rear axle through Merchant & Evans triple universal joints with slip joint to allow for spring action. Alignment of drive shaft is maintained by a self-aligning center bearing.

The rear axle is an internal gear, Torbensen. It has extra large nickel steel gears, which provides a final gear reduction of 6.6:1. Entire load is carried on a drop-forged "I" beam.

At the rear the springs are semi-elliptic, made of alloy steel. They are extra heavy and have 12 leaves 2½ in. wide.

The front springs are also semi-elliptic and constructed from the same material, but have only 9 leaves. The wheels, which are standard, are of the wooden artillery type with demountable rims for pneumatic cord tires. The dashboard is metal. The spark and throttle control levers are on the steering column. There is an accelerator in the floor under the driver's foot. Electric starter, lights and horn is optional equipment.



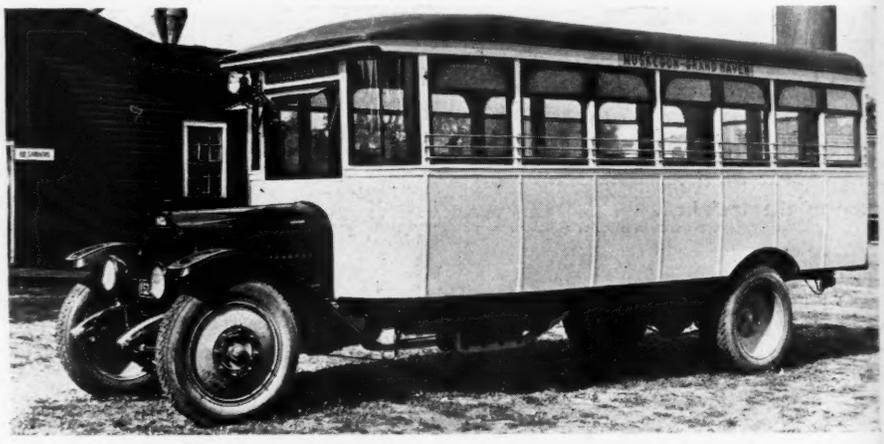
This One and a Half Ton Eagle Was Recently Introduced to Meet Quick Delivery Requirements

Fitz John-Erwin Offers Complete Bus Body

IN the Model A-50 "Fitz-er" bus body the engineers of the Fitz John-Erwin Mfg. Co., Muskegon, Mich., have incorporated all the latest improvements and features of up-to-date bus body construction. Lightness in weight coupled with strength, durability and resistance to weave and vibration constituted the working basis of the engineers in its designing. In addition every attempt has been made to provide the riding public with every convenience possible.

The bodies are equipped with three polished guard rails on each side. Complete protection is afforded the woodwork of the structural frame, which is of thoroughly kiln dried hardwood seasoned and dried in the company's own kilns, by sheathing of 20 gage auto body sheets carefully joined and reinforced by sheet metal moulding. During the assembly the entire paneling is given a thorough coat of white lead, further assuring watertightness.

All the windows are of the raise-up type, which provide a clear opening of 16 in. when raised. The window frames are equipped with anti-rattlers of the roller type. White metal mouldings exclude the dust from the interior when the windows are lowered. The top sash of each window is glazed with Florentine glass. An adjustment every 1½ in. permits the passenger to raise his particular window to any height desired. Push buttons are provided at the side of each seat. The ceiling is finished in Beaver board.



Service, Lightness and Appearance Feature the "Fitz-er" Bus

The roof is of three-ply Haskelite veneer of special bus construction covered with 12 oz. oiled duck. Heating is conventional, being furnished from the exhaust, the butterfly valve of which is controlled at the driver's seat. Three roof ventilators of the Nichols-Lintern type provide ventilation. Lighting is furnished by three dome lights in the center of the ceiling and three side ceiling pendants equipped with regulation Alba shades on each side of the body.

The windshield is of the three-piece full ventilating type.

General specifications follow:

Length—19 ft. 3 in.; width, 88 in.; height, 6 ft. 3 in.; seating capacity, 25 passengers.

New Walker Light Delivery Electrics

OF interest to the trade is an announcement of the enlargement of the line of the Walker Vehicle Co., Chicago, Ill. The addition is a new light delivery model. This Model 12, one-half ton job completes the Walker line of ½, 1-, 1½-, 2-, 3½- and 5-ton load capacities. It is equipped with a standard "Ford" type delivery body and has a low frame, with the driver's entrance back of the front wheels for "many-stop" city route deliveries. The job is particularly practical and economical as a substitution for present horse-drawn vehicles used in "many-stop" deliveries. The price in view of economy in operation and satisfactory performance, is stated to be well within range of all light delivery car users, such as bakers, laundries, grocers, department stores, etc.

Longer bodies up to 80 in. long back of seat may be applied by purchasers, as frames 72 in. long back of seat are also furnished.

Specifications of this new Walker chassis follow:

Load Capacity—1000 lb. maximum when battery and body weigh 2000 lb. Mileage—Per charge of battery approximately 40 miles on level, hard, smooth pavement with half load. Maximum Speed —15 m.p.h. with half load on level, hard, smooth pavement.

Wheel Gage—56 in. Wheelbase—104 in. Frame Length back of seat—60 or 72 in. Frame Height—approximately 26 in. loaded.

Battery Equipment—42 cells 11 W. M. T. Philadelphia, or 42 cells 9 M. V. Ironclad, or 60 cells A-5 Edison (mounted under hood and in body).

Frame—Pressed steel, channel section, securely riveted and braced. Springs—Semi-elliptic, chrome vanadium steel. Hood—Hinged hood for front battery.

Drive—Single motor—propeller shaft with two universal joints—single reduction spiral bevel gear drive axle type. Motor—Series type with ball bearings. Mounted centrally under frame. (60-volt motor for Edison battery—80-volt motor for lead battery).

Front Axle—Drop-forged steel axle, knuckles and arms. Roller bearings. Rear Axle—Spiral bevel gear, single reduction type. Roller bearings.

Wheels—Artillery type wood wheels. Tires—Solid rubber pressed-on type, 32 x 3 in. front, 32 x 3½ in. rear.

Brakes—Two sets on rear wheels operated by right and left pedals.

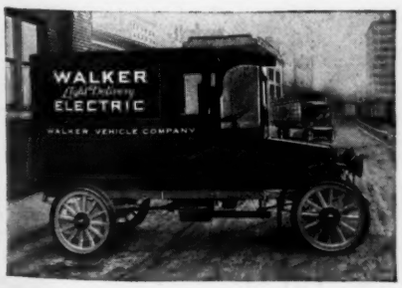
Steering—Ross fore and aft type, located on left side.

Speed Control—Series drum type controller, giving 4 speeds forward and 2 reverse (mounted on frame under foot boards).

Wiring—Large capacity with best insulation.

Lubrication—All parts run in oil or lubricated by pressure grease system.

Accessories—Two head lights, tail light, safety switch and key, hand horn, charging plug and receptacle, front fenders, steps, tools. If chassis is furnished without body it is painted with priming coat only.



Walker Adds This New Light Delivery Electric

Sixty-Six Passenger Fruehauf

A NOVEL six-wheel bus unit was recently designed by the Fruehauf Trailer Co., Detroit, Mich., for the Detroit Department of Parks and Boulevards. It is used for carrying passengers between points in Belle Island Park, and is believed to be the first unit of its kind to be used in the country.

With its seating capacity for sixty-six, it is declared the largest single deck bus in service. All loading and unloading is from platforms and through four folding doors. The compressed air operated doors are controlled by the driver from his seat. The trailer is also equipped with air controlled brakes. As doors and brakes are operated with the same valve, it is impossible to open the doors without first setting the brakes; likewise the brakes cannot be released without the doors being closed. With the service and emergency brakes, which are standard equipment on the truck, three complete and separate sets of braking systems are provided which may be operated independently or at one time.

The bus is equipped with long flat springs of special alloy steel and cushion wheels are used on both truck and trailer. The bus interior is similar in appearance to a modern street car with cane upholstered seats. The side walls are finished in natural oak and the ceiling in imitation mahogany. Ventilation is provided by ventilators installed in the roof and lighting power is furnished by battery. Although the bus body is 29 ft. long, the vehicle can be turned in a radius of 39½ ft., less than an ordinary long wheelbase motor truck.

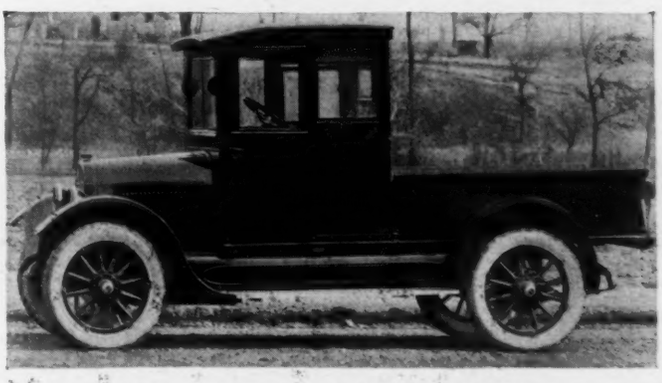
The truck is a 3½-ton model with wheelbase of 10 ft., the total wheelbase being 30 ft. and overall length 37 ft. Compressed air is carried in a small tank fastened on the running board of the truck and is supplied by pump driven from the engine. The connection to the trailer is through flexible tubing with quick detachable couplings.

The trailer is detachable and equipped with folding supports at the front for employment when disconnected from the truck.

Fruehauf Brings Out This New "Six-Wheeler" With a Seating Capacity for Sixty-six Passengers

New Buick "Special Delivery" Light Truck Recently Brought Out by the Buick Motor Co., Flint, Mich.

It is equipped with express body and vestibule and lists at $985 f.o.b. factory. This same job can be furnished with canopy top delivery and roll side curtains at a list of $985, and as a panel side delivery with steel panels at $980. The chassis and its various components are identical to those found in regular Buick four-cylinder passenger chassis. The wheelbase is 109 in. and the engine has a bore and stroke of 3⅛ in. x 4¾ in. respectively. The rear axle is three-quarter floating, and the tires are 31 x 4 in. cords. The equipment includes Alemite chassis lubrication and complete electrical equipment.



Thirty-Passenger Imperial Omnibus Now Being Announced

THE 30-passenger Imperial omnibus recently announced has made considerable progress in production and is now stated as coming through in increasing quantities.

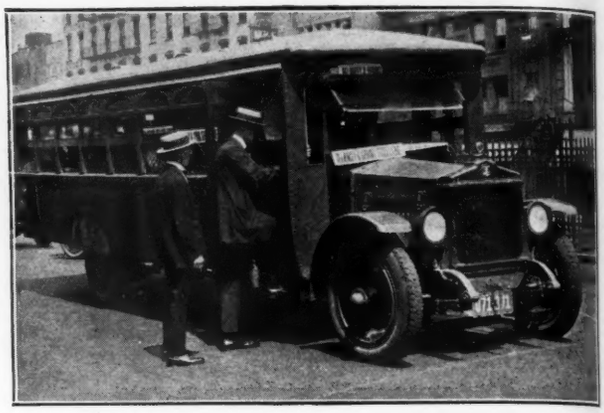
The Trackless Transportation Corp., 300 Madison Ave., New York City, which manufactures this low center of gravity omnibus, realizing that the motor bus has a definite place in transportation, designed every element of this omnibus to thoroughly cover the purpose intended. Also, cognizance has been taken of the fact that the motor truck was built for freight carrying purposes, and has only been used in passenger bus service because a properly designed vehicle was not obtainable.

Disregarding truck practice in design this company has developed a vehicle specifically for the carrying of passengers. Great stability, ease of riding, comfort and convenience of passengers, a low center of gravity and a maximum in safety; some of the factors claimed to have been met.

The low center of gravity is produced by a kick-up in the frame, underslung springs and a drop front axle, with the result that the floor is but 26 in. from the ground. The front wheel track is 66½ in., while the rear track is 71 in., tending to stabilize and entirely do away with side sway. A wide frame is used instead of the usual motor truck frame. The wheelbase is 195 in.; 25 ft. overall length.

In addition this company is preparing to bring out a 16- to 20-passenger light job of the same design, and it is expected that this will successfully meet the conditions existing in the large cities where traffic conditions are heavy, it being built ruggedly to withstand heavy overload. A Midwest engine of special design will constitute the power plant. The bodies are rigidly mounted on steel trusses and sills.

Briefly: Standard Imperial bodies are light; all steel or DeLuxe wood, carbuilt construction, with attractive lines and luxurious appointments. They are equipped with Marshall spring cushion leather seats; emergency door at rear; window guard rails; ventilators; heaters; dome; step and destination sign lights; push buttons; rear view mirror; grab rails and stanchions; driver's guard rail and shade; fire extinguisher; sanitary corrugated floor treads. Ceilings are white enameled—6 ft. 5 in. from floor.



This New Thirty-Passenger Imperial Omnibus Embodies Many Distinctive Bus Features Entirely Apart From Ordinary Truck Practice.

A New Whitfield Speed-Coach Body Replete With Features

THE purpose of designing this body was to supply a light bus body which would not alone be comfortable to the maximum degree, but at the same time present an attractive appearance. Some novel features are incorporated in this new job, built by W. H. Whitfield, of Pen Yan, N. Y.

The following specifications will give the reader an adequate idea of the construction and equipment of this body.

Dimensions:—Length over all, 14½ ft.; width over all, 70 in.; headroom, 68 in.; capacity—fourteen passengers with driver body weight—14000 lb.; complete height of body from ground (extreme head of roof), 98 in.; 11½ in. step from running-board of chassis onto floor of body.

Floor:—Matched hardwood, which provides a resilient foundation, and permits low-hung construction, eliminates cumbersome steps, has fewer parts and reduces body weight.

Frame:—Made entirely of seasoned hardwoods, glued, screwed and bolted together; well ironed at every corner. Whitfield design of graceful, streamline curves are built into the body with ash posts cut from natural curve with rafters steamed and bent to form. Panels are of heavy gage auto steel. Wheel housings are dust tight.

Upholstery:—Passengers are cushioned on double coil springs, 6 in. deep, well padded and covered with DuPont fabrikoid, gray.

Windows:—Glazed with 26 oz. coach glass set into sash in rubber. Sash raise 9 in. in felt lined steel channel, thereby preventing rattle, warping and binding. Care in fitting windows, use of weather stripping and special channel make a perfectly weather-proof body.

Refinements:—Include pillar lights with switch on instrument board with accessible wiring. Marker lights, red and green. Racks for advertising cards; emergency door in rear of body; entrance door, silent and positive-acting; no steps except chassis running board; battery compartment under driver's seat with tool box on running board; moldings of metal attached with oval head screws. Smith windshields set at an angle increase vision, eliminates reflection and reduces wind resistance. Special "V" shaped front gives the distinguishing mark of the Whitfield DeLuxe Coach designed for Larrabee Speed Six.

Finish:—Standard finish is in Mojave gray applied in eight separate operations, trimmed in red stripe, lettered in gold leaf with red outline. Roof is covered with dark brown fabrikoid. The interior is finished in gray enamel, with light roof; all fittings are nickeled. Panels can be finished with Fabrikoid if desired, thus producing a most unique, serviceable and distinguished finish, allowing the operator of several buses to own a fleet uniform in finish and attractive in appearance.

Many Novel Features Are Incorporated in This New Whitfield Job

TRUCK EQUIPMENT AND APPLIANCES

The Scoe Carburetor

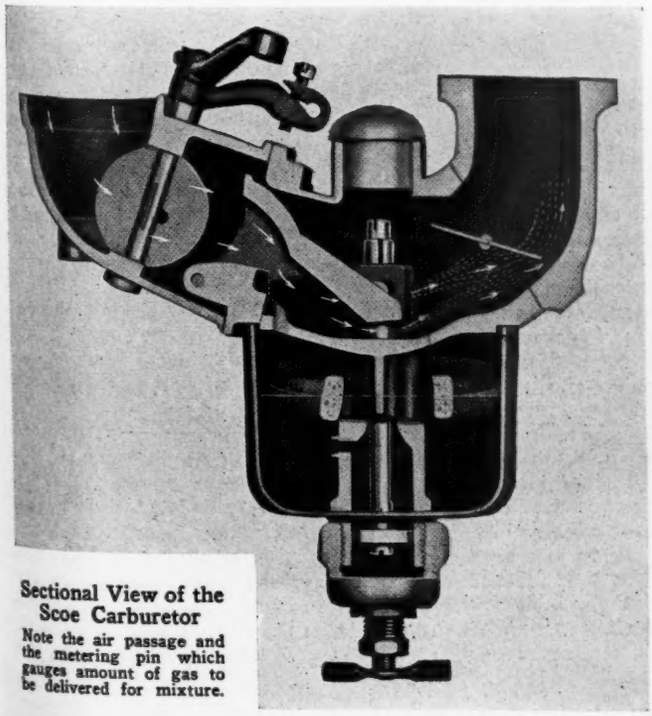
In the Scoe carburetor recently introduced by the Briscoe Devices Corp., Pontiac, Mich., the metering pin is operated by the air shutter and its travel is therefore governed entirely by the quantity of air being drawn in by the engine. An interesting and valuable feature of the design is that the mixture curve has no inherent form, but may be varied to meet any practical requirement of the motor. The metering pin carries two entirely separate jets, one of which is so arranged that its feed may be held constant or diminished as the air shutter rises, and the other may be held constant or increased. By varying the proportions and the timing of these two jets, it is possible to get practically any mixture ratio curve desired, at any degree of opening. A representative ratio curve, which has been found to meet the demands of the average engine far more completely than a flat, or symetrical curve, has the following characteristics: fairly rich for idling, richer for slow pulling and acceleration, lean for normal driving at ordinary speeds, and slightly richer for high speed.

In the Scoe type of carburetor, sharp and clean shift from one mixture ratio to another is accomplished by mechanically restricting one of the jets at a predetermined point in the metering pin travel. This point may be timed to meet the requirements of various engines and vehicle loads.

The functioning of the instrument is simple. The air passes under the air shutter which is hinged at the rear and which raises and lowers according to the amount of air which is being drawn through the carburetor. The metering pin is articulated with the air shutter and carries, at its lower end, a dash pot working in a well of gasoline to guard against too sudden fluctuations of the air shutter in acceleration and deceleration.

The metering pin itself carries two distinct jets. The central jet is fed by two lateral holes and is adjustable at the top with a baffling screw. Since the central jet supplies most of the fuel in the idling position, this adjustment controls the idling mixture. The location of the upper lateral feed hole governs the timing of the jet restriction, or the car speed at which the mixture becomes leaner.

The second jet is a flat, milled on the front side of the metering pin stem, the jet being formed by the space between this flat and the guide in which the metering pin operates. The stream of air always holds the metering pin forward in its guide so that the manufacturing limits in the clearance of these two parts do not affect the metering. The flat jet terminates at the top in a step which permits the fuel to feed very slowly even while the motor is idling. This feed is used to keep the column of fuel constantly at the top of the flat jet and available for quick acceleration. The main portion of the flat jet starts 1-16 in. from the head of the metering pin and continues at a uniform depth of about .011 for a distance of 7-16 in., from which point its depth increases in a uniform taper. Any of these dimensions of course, may vary as conditions require.



Sectional View of the Scoe Carburetor

Note the air passage and the metering pin which gauges amount of gas to be delivered for mixture.

When the motor is idling or when the car is running under normal conditions at 8 m.p.h. or under, the air drawn through the carburetor is not sufficient to raise the air shutter. This is the first phase. The flat jet is consequently not brought into full operation and the feed is almost entirely through the central jet. Both lateral holes are feeding this jet so that its discharge is restricted only by the setting of the adjusting screw at the top.

In the second phase the car is running under normal load at 16 m.p.h. or under or is running at full load between 5 and 8 m.p.h. The latter is a frequent condition where the car is being accelerated from a slow idle on high gear, and is the condition which requires the richest mixture. The amount of air drawn in is sufficient to raise the air shutter from 1-16 to 5-32 in. The upper lateral feed hole for the central jet is so located that it will deliver an unrestricted flow through this range. The flat jet cuts in at 1-16 of an in. and feeds almost as much as at the mileage position.

In the third phase it is necessary to reduce the quantity of fuel sharply even though the air opening is being increased by the raising of the air shutter. This decrease in fuel is acomplished by so locating the upper feed hole for the central jet that it will enter the metering pin guide and be closed at this point. The discharge of the central jet is now restricted to the fuel admitted by the lower lateral feed hole which is much smaller. The size of this feed hole is varied for different types of motor so that the driving mixture will be held at convenient leanness. This phase of operation covers speeds from 18 to 35 m.p.h. under normal load, or from 8 to 18 m.p.h. at full load.

The fourth phase is at speeds between 35 and 55 m.p.h. under normal conditions, the metering pin operates at a height ranging from 7-16 to 7/8 in., according to speed. This corresponds to full load operation at 18 m.p.h. and over. It is desirable here to use a little wider margin of safety on the mixture ratio, since the ratio at this speed does not materially affect the average mileage. The central jet therefore delivers its restricted flow as in the third phase and the flat jet increases in depth by a gradual taper to correspond with the mixture requirements at a wider air shutter opening.

It will be noted that in the Scoe carburetor the Venturi is formed by the space between the air shutter and the floor of the carburetor. As the air shutter rises, the size of this Venturi is increased, thus approximating a constant air speed over the jets. With this variable Venturi it is possible to allow a considerably larger opening at high speeds than would be the case if one fixed size had to be selected. At the same time, the air velocity over the jets at slow motor speeds is very much higher than would be the case if a compromise fixed Venturi were used. The effect of this is to give better mixing at low speeds and less resistance at high speeds, with a corresponding increase in volumetric efficiency.

Use for Obsolete Radiator Shells

The Cadillac Motor Car Co. suggests the use of obsolete radiator shells as bulletin boards, especially for "Safety First" signs. A glass front can be inserted.

Butler Vaporizer

The Butler Vaporizer recently placed on the market by the Butler Vaporizer Corp., 7 East 42nd St., New York City, is designed to impart to gas mixture, maximum volatility. It is installed between the carburetor and the intake manifold and consists of seven copper tubes, through which the fuel mixture passes, enclosed in a cast iron heating jacket. The hot gases from the exhaust pipe are bypassed around these tubes and led out by another pipe terminating beneath the engine pan.

The tube arrangement causes the gasoline to be flashed into a dry gas as it comes into direct contact with sufficient heat. It does away with the large central passage of cold mixture existing where it is surrounded by only one wall. This

Note the Copper Tube Construction of This Butler Vaporizer

fast-moving central column of fuel, it is explained, is usually carried into the cylinders in its original liquid condition to cause incomplete combustion, gas knocks and heavy carbon deposits.

The seven small tubes in the Butler vaporizer is claimed to eliminate the "cold center," instead bringing all the liquid fuel into contact with heated surfaces. It eliminates carbon deposits and crankcase oil dilution. It reduces fuel consumption twenty to forty per cent, as repeatedly proven in official tests at Yale University and in the Tracey Laboratories.

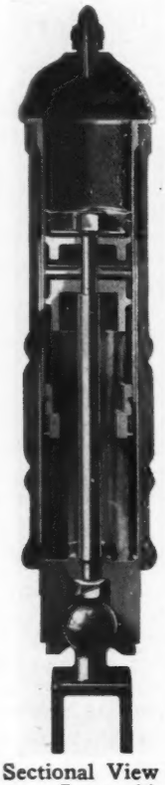
This device is claimed to eliminate carbon deposits, crankcase oil dilution and to facilitate starting with a cold engine in cold weather.

Gruss Air Springs to be Nationalized

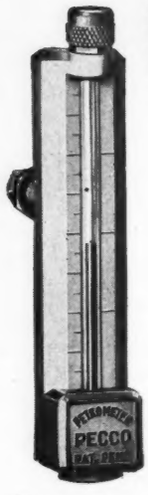
The Cleveland Pneumatic Tool Co., one of the largest manufacturers of its line in the world, with distribution branches in all large cities, recently secured manufacturing and sales rights for Gruss Air Springs, a device which utilizes cushions of compressed air to absorb road shocks and vibrations. They have been manufactured for several years on the Pacific Coast by the Pneumatic Cushion Co., of San Francisco, patentees.

The Gruss Air Spring utilizes cushions of compressed air, encased in four metal cylinders, to absorb road shocks and vibrations. The outer shell fastens to the frame of the vehicle, and the sliding unit fastens to the end of the standard spring by means of the spring ball shackle at the bottom.

This spring operates as follows: Oil is injected into the oil chamber until it is completely filled, and as the oil rises it traps a quantity of air in the lower air chamber. A little oil is then added above the piston to act as a seal to keep the air positively confined in the air chamber after it is inflated by an air hose, which is attached to air valve similar to that used on a tire. As the air enters the upper chamber and compresses, it lifts the vehicle until the piston is in position and



Sectional View of a Gruss Air Spring



Petrometer Gas Gage, for Determining Gas Content.

the vehicle in normal riding position. The vehicle is thus suspended on four resilient cushions of compressed air. All recoils are checked by the cushions of air in the lower air chamber.

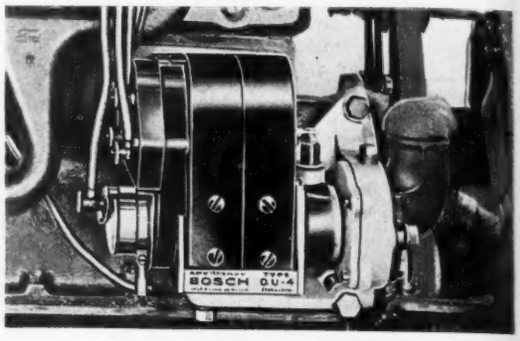
When the steel spring rebounds after a severe compression it tends to pull the piston downward, which is prevented as follows: As the piston starts downward the oil must pass through the oil ring, thus retarding its movement, and thereby causing the oil to rise in the lower air chamber, compressing the air and affording an air cushion below as well as above.

A ball joint in the spring shackle for rear installation prevents rocking and side sway. This spring is made in four sizes: Junior—for cars up to 2600 lb.; Standard—for cars over 2600 lb. and light trucks; Transport Special—for motor buses; and Heavy Duty, for trucks over 2-tons capacity.

New Bosch Magneto Fitting

The American Bosch Magneto Corp., Springfield, Mass., recently brought out another new ignition system especially designed for Ford cars and trucks. This new fitting is designed especially for Fords of 1919 and later, that are not equipped with generators.

The Bosch engineers have taken advantage of the revised Ford engine construction provided in 1919 by making simple fitting for mounting the Bosch magneto in place of the generator. To attach it is only necessary to remove the generator adapter casting, and to mesh the single gear of the fitting with the camshaft gear, bolting the fitting in place. The installation can be made quickly and easily, it being unnecessary to take off any complicated fitting.



New Bosch Ignition System, Designed Especially for Fords, Properly Installated

This new fitting can be supplied with either of two types of Bosch magnetos—the DU or ZR.

The Bosch Magneto Fitting is claimed to enable a Ford owner to get greater economy and power; complete burning of gas in the cylinders is assured.

Petrometer, Type A

The Petrometer, type A, offered by the Porter Electric Carburetor Co., Knickerbocker Bldg., 42nd & Broadway, New York City, is a dash gasoline gage that shows the amount of gasoline in a tank which is open to the air, such as those using the gravity or vacuum system of fuel feed.

It is connected by a small hollow wire, which extends in enlarged form through a special fitting at the top to the bottom of the tank. When the tank is filled, the fuel entering the bottom of the tank tube compresses the air in the tube, and this compression, transmitted by the air through the hollow wire, is registered by a special red fluid in the glass gage on the dash. This fluid is visible in all light and from all practical positions.

Due to a pressing need of expansion to take care of the large number of orders of the Mason Tire & Rubber Co., Kent, O., this company has bought the Owen Tire & Rubber Co. at Bedford, O., and will manufacture one sized cord tires at the new plant. A capacity of 1500 tires a day is set as the starting production mark. The Mason Co. has been furnishing the Ford Motor Co. with tires for many years.

Replacement Table—Corrected Monthly

Including Piston Ring Sizes, Carburetor Sizes, Hose Sizes, Fan Belt Sizes, Brake Lining Sizes and Truck Frame Dimensions

Note: Under Carburetor Inlet Diameter Will be Found Either the Size of Main Air Intake or the Gasoline Fuel Line

Fan Belt Type: V—V-Shape, F—Flat, R—Round

Name, Model and Tonnage	ENGINE												BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Acason R–1	4	1/4	1										11 1/2	3	1/4	2	11 1/2	3	1/4	2	112	34
Acason RB–1 1/2	4	1/4	1										11 1/2	3 1/2	1/4	2	11 1/2	3 1/2	1/4	2	112	34
Acason H–2 1/2	3	1/4	1 1/4										13 1/2	3 1/2	1/4	2	13 1/2	3 1/2	1/4	2	130	35
Acason –L3 1/2	3	1/4	1 1/4										16	3 3/4	1/4	2	16	3 3/4	1/4	2	163 3/4	35
Acason M–5	3	1/4	1 1/2										18	4 1/2	1/4	2	18	4 1/2	1/4	2	167 1/2	35
Ace, Series A–1 1/2	3	1/8	1 1/4	1 1/4	H	10 3/4	2 1/4	6 1/2	2	37 1/2	1	F	12	3 1/2	1/4	4	12	3 1/2	1/4	4	122 1/2	32
Ace, Series A–2 1/2	4	1/4	1 1/4	1 1/4	V	10 3/4	2 1/4	5 1/2	1 1/4	33	1 1/4	F	13	3 1/4	1/4	4	13	3 1/4	1/4	4	144 1/2	32
Acme 20–1	3	1/8	1	1	V	11	2	11	2	38 3/4	3/4	V	10 1/2	2 1/2	1/4	4	10 1/2	2 1/2	1/4	4	110 3/8	34
Acme 30–1 1/2	3	1/8	1	1	H	11	2	11	2	38 3/4	3/4	V	12	3 1/4	1/4	4	12	3 1/4	1/4	4	110 3/8	34
Acme 40–2	4	1/4	1	1	H	8	1 1/2	11 1/2	1 1/2	40	1 1/4	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	123 3/8	34
Acme 60–3	4	1/4	1 1/4	1 1/4	H	7	1 1/4	11	1 1/4	33 3/4	3/4	F	13	3 1/2	1/4	4	13	3 1/2	1/4	4	132 3/8	34
Acme 60L–3	4	1/4	1 1/4	1 1/4	H	10	1 1/2	13	1 1/2	33 1/2	1 1/4	F	13	3 1/2	1/4	4	13	3 1/2	1/4	4	140 11/16	34
Acme 90–4 1/2	4	1/4	1 1/4	1 1/4	H	11 1/2	1 1/2	13	1 1/2	33 1/2	1 1/4	F	15 1/2	3 3/4	1/4	4	15 1/2	3 3/4	1/4	4	150 1/4	36
Acme 125–6 1/4	3	1/4	1 1/2	1 1/2	H	11	2	11 1/2	2	40 1/2	2	F	18	4	4	4	18	4	1/4	4	159 3/4	37
American 25–2 1/2	4	1/4	1/8	1 1/4	V	19	1 3/4	17	1 1/2	38	2	F	19	2 1/4	1/4	4	19	2 1/4	1/4	4	142	33
American 40–4	4	1/4	1/8	1 1/4	V	19	1 3/4	9 1/2	1 3/4	38	2	F	57	2 1/2	1/8	2	41 1/2	2 1/2	1/8	2	142	37
American 50–5	4	1 1/4	1/8	1 1/4	V	19	1 3/4	9 1/2	1 3/4	38	2	F									158	37
Apex C–1	3	1/8	1	1	V	7 1/4	2	12	2	36 1/2	7/8		42	2		2	41 1/2	2		2	102	35 1/2
Apex D–1 1/2	3	1/8	1	1	V	7 3/4	2	12	2	36 1/2	7/8		42	2		2	41 1/2	2		2	102	35 1/2
Apex E–2 1/2	4	1/4	1	1 1/4	V	7 1/2	1 1/4	8	2	32	1		54	2 1/4		2	53 1/4	2		2	128	31 1/2
Apex G	3	1/8	1	1	V	12	2	15 1/2	2	34 1/2	7/8		24	2		2	41 1/2	2		2	102	35 1/2
Armleder 21–1 1/2	4	1/4	1	1/8	V	12	1 3/4	16 1/2	1 1/4	31 1/2	2	F	11 1/2	3 1/4	1/4	4	11 1/2	3 1/4	1/4	4	Opt	32
Armleder 40B–1 1/2	4	1/4	1 1/4	1/8	V	9 1/2	2	11 1/2	1 1/4	33 1/4	2	F	13 1/2	3 1/2	1/4	4	11 1/2	3 1/2	1/4	4	Opt	32
Armleder 40C–1 1/2	3	1/8	1 1/4	1/8	V	10	1 1/2	11 1/2	1 1/4	35	1 1/4	F	13 1/4	3 1/2	1/4	4	11 1/2	3 1/2	1/4	4	Opt	32
Armleder KW–3 1/2	4	1/4	1 1/4	1/8	V	12	2	16 1/2	1 1/4	35 3/4	2	F	42	3	1/8	1	16	3 3/4	1/4	8	Opt	36
Armleder KWC–3 1/2	3	1/8	1 1/4	1/8	V	10	1 1/2	16 1/2	1 1/4	35 3/4	2	F	42	3	1/8	1	16	3 3/4	1/4	8	Opt	36
Armleder HWB–2 1/2	4	1/4	1 1/4	1/8	V	9 1/2	2	11 1/2	1 1/4	33 1/4	2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Armleder HWC–2 1/2	4	1/8	1 1/4	1/8	V	10	1 1/2	11 1/2	1 1/4	35	1 1/4	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Atco B–1 1/2	4	1/4	1	1	V	11	2	11	1 1/4	31 1/2	2	F	25 1/2	2 1/2	1/8	4	18	2 1/2	1/8	4	109 3/4	32
Atco B1–1 1/2	4	1/4	1	1	V	11	2	11	1 1/4	31 1/2	2	F	46	2 1/2	1/8	2	46	2 1/2	1/8	2	109 3/4	32
Atco A–2 1/2	4	1/4	1 1/4	1/4	V	12	2	11	1 1/4	33 1/4	1 1/4	F	25 1/2	2 1/2	1/8	4	18	2 1/2	1/8	4	124 1/4	33
Atlas 21–1	3	1/8	1 1/4	1/4	H	9	2 1/4	14 1/2	2 1/4	31 1/2	1	F	40	2 1/4	1 1/16	1	22 1/2	2 1/4	1/8	1	84 1/4	33 1/4
Atterbury 20R–1 1/2	4	1/8	1	3/8		8	1 1/2	14	1 1/2	38 11/16	1 1/4	F	11 1/16	3 1/4	1/4	4	11 1/16	3 1/4	1/4	4	122 1/2	34
Atterbury 7CX–2 1/2	3	1/8	1 1/4	3/8		5 3/4	1 1/4	6 3/4	1 1/4	30 1/4	1 1/4	F	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	133 5/8	34
Atterbury 7D–3 1/2	3	1/8	1 1/4	3/8		8	1 1/2	6	1 1/4	30 1/4	1 1/4	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	145 5/8	37 1/2
Atterbury 8E–5	3	1/4	1 1/2	3/8		14	2	20 1/2	2	40	2	F	17 3/4	4	1/4	4	17 3/4	4	1/4	4	157 7/8	37 1/2
Autocar XXI–F–2	4	1/8	1 1/16			3	1 1/8	4	1 1/8					2 1/2	1/16	4	13	2 1/2	1/16	4	91	34
Autocar XXI–G–2	4	1/8	1 1/16			3	1 1/8	4	1 1/8					2 1/2	1/16	4	13	2 1/2	1/16	4	114	34
Autocar XXVI–Y4	3	1/4	1 1/16			3 1/2	1 1/2	3	1 1/2	48 3/4	1 1/2	F	25 1/2	2 3/4	1/4	4	25 1/2	2 3/4	1/4	4	121	34 1/2
Autocar XXVI–B4	3	1/4	1 1/16			3 1/2	1 1/2	3	1 1/2	48 3/4	1 1/2	F	25 1/4	2 3/4	1/4	4	25 1/2	2 3/4	1/4	4	176	34 1/8
Available H–1 1/2	4	1/8	2 1/4	1 1/8		11	1 5/8	14	1 5/8	40	2		48	2 1/2	1/4	2	36	2 1/2	1/4	2	120	32
Available H–2 1/2	3	1/8	2 1/4	1 1/8		11	1 5/8	14	1 5/8	40	2		13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	144	32
Available H3	3	1/8	2 1/2	1 1/8		11	1 5/8	14	1 5/8	42	2		16	3 3/4	1/4	4	16	3 3/4	1/4	4	168	36
Available H5	3	1/4	2 1/2	1 1/8		12	2	16	2	40	2		18	4	1/4	4	18	4	1/4	4	168	38
Available H2	4	1/8	2 1/4	1 1/8	V	12	1 5/8	14	1 5/8	40	2	F	48	2 1/2	1/4	2	36	2 1/2	1/4	2	120	32
Available H2 1/2	4	1/8	2 1/4	1 1/8	V	12	1 5/8	14	1 5/8	40	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	144	32
Available H3 1/2	4	1/8	2 1/2	1 1/8	V	12	1 5/8	14	1 5/8	42	2	F	16	3 3/4	1/4	4	16	3 3/4	1/4	4	168	36
Available H5	4	1/4	2 1/2	1 1/8	V	12	2	16	2	40	2	F	18	4	1/4	4	18	4	1/4	4	168	38
Avery 1	3	1/8		1		10	2	6 1/2	2	31 3/4	1 1/2	F	19 1/2	2	1/8	4	18 1/2	2	1/8	4	85	34
Bell M–1	4	1/8	1	1/8	V	10	2	10	1 1/2	32	2	F	36	2 1/2	1/8	1	42	3	1/4	1	110	34
Bell E–1 1/2	4	1/8	1	1/8	V	10	2	10	1 1/2	32	2	F	39	2 1/2	1/8	1	48	3	1/4	1	114	34
Bell O–2 1/2	4	1/8	1 1/4	1/8	V	10	2	10	1 1/2	32	2	F	48	2 1/2	1/8	1	54	3	1/4	1	126	34
Bessemer G–1	3	1/8	1	1/8	V	11 1/2	2 1/4	10	2 1/4	42	5/8	V	47 1/2	2 1/2	1/8	2	45 1/2	2 1/4	1/8	2	98 1/4	34
Bessemer H–2–1 1/2	3	1/8	1	1/8	V	11 1/2	2 1/4	10	2 1/4	43	5/8	V	56 1/2	2 1/2	1/8	2	55	2 1/4	1/8	2	116	34
Bessemer J2–2 1/2	3	1/8	1 1/4	1/8	V	12	1 1/2	5	1 7/8	36 1/4	1 1/4	F	56 1/2	2 1/2	1/8	2	55	2 1/2	1/8	2	142 3/8	38
Bessemer K2–4	3	1/8	1 1/4	1/8	V	11 1/2	2 1/2	10	2 1/4	39 3/8	1 1/2	F	58 1/2	3 1/2	1/8	2	30 1/4	4 1/2	1/8	1	157 1/2	38
Brinton C–1 1/2	3	1/8	1 1/8	3/8		11	1 1/4	13	1 1/4	33 11/16		F	39	2 1/2	1/8	1	38	2 1/2	1/8	1	118	33
Brinton D–2 1/2	3	1/8	1 1/8	3/8		11	1 1/4	13	1 1/4	33 11/16		F	13	3 1/2	1/4	2	13	3 1/2	1/4	2	135 1/2	33
Brockway S2–1 1/2	3	1/8	1		V	10 1/2	2 1/4	5 1/2	2 1/4	39	1 1/4	F	20	2	1/8	4	20	2	1/8	4	118	32
Brockway K4–2 1/2	3	1/8	1 1/4		V	6 1/2	1 3/4	13	1 1/4	34	1 1/4	F	12	3 3/8	1/8	4	12	3 3/8	1/8	4	142	34
Brockway R–2–3 1/2	3	1/8	1 1/4		V	9 1/2	1 3/4	14	1 1/4	34	1 1/2	F	15 5/8	3 3/4	1/8	4	15 5/8	3 3/4	1/8	4	176	36
Brockway T–5	3	1/4	1 1/2		V	13	2	22	2	40 3/8	2	F	18	4	1/8	4	18	4	1/8	4	176	36
Buffalo Tractor-Truck	4	1/8	1 1/4	1/8	V	7	1 5/8	13	1 5/8	41 1/2	2	F	21	2 1/4	1/4	4	21	2 1/4	1/4	4	124	34
Capitol G–1 1/2	3	1/4	1 1/16	1 1/16	V	18	1 3/4	18	1 1/4	32 11/16	1 1/4	F	47 1/16	2 1/2	1/8	1	33 1/4	2 1/2	1/8	1	120	32
Capitol H–2 1/2 and K–2 1/2	3	1/4	1 1/16	1 1/16	V	18	1 3/4	18	1 1/2	39 1/2	2	F	57 1/2	2 1/2	1/8	1	42 1/2	2 1/2	1/8	1	132	34
Capitol M–3 1/2	3	1/4	1 1/16	1 1/16	V	18	1 3/4	18	1 1/2	39 1/2	2	F	57 1/2	2 1/2	1/8	1	42 1/2	2 1/2	1/8	1	144	34
Case	3	1/4	1 1/16	1 1/16	V	7	1 1/2	6	1 1/2	47 1/8	2		25 1/2	2 1/2	1/8	4	24 1/4	2 1/4	1/8	4	106	31
Chicago C–1 1/2	4		1	1 1/2						40	2		12 1/8	3 1/4	1/4	4	12 1/8	3 1/4	1/4	4	123	32
Chicago C–2 1/2	4		1 1/4	1 3/4						40	2		13 3/4	3 1/2	1/4	4	13 3/4	3 1/2	1/4	4	135	32
Chicago C–3 1/2	4		1 1/4	1 3/4						46	2		16	3 3/4	1/4	4	16	3 3/4	1/4	4	180	36 3/4
Chicago D–5	4		1 3/4	1 3/4						46	2		18	4	1/4	4	18	4	1/4	4	180	36 3/4
Climber A–20	3	1/8	1	1 1/4	H					32	1		16	2 1/4	1/4	2	16	2 1/8	1/8	1	120	34
Clydesdale 120B–5–6	3	1/4	1 11/16	1/8	V	9	2	18 1/2	2	46 1/2	2	F	18	4	1/4	4	18	4	1/4	4	131	38
Clydesdale 90–3 1/2–4 1/2	3	1/8	1 5/8	1/8	V	9	1 1/2	14	1 1/2	42	1 1/2	F	16	3 1/4	1/4	4	16	3 1/4	1/4	4	143	38
Clydesdale 65EX 2 1/2–3	3	1/8	1 5/8	1/8	V	9	1 1/2	14	1 1/2	42	1 1/2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	132	33 1/4
Clydesdale 65X–2 1/2–3	3	1/8	1 1/16	1/8	V	11	1 1/2	11	1 1/2	40	1 1/2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	137	33 1/4
Clydesdale 42–1 1/2–2	3	1/8	1 1/16	1/8	V	15	2	12	2	41	3/4	V	12	3 1/4	1/4	4	12	3 1/4	1/4	4	117	34
Clydesdale 20–1–1 1/2	3	1/8	1 1/16	1/8	V	15	2	12	2	41	3/4	V	11 1/4	3	1/4	4	11 1/4	3	1/4	4	95	34

Replacement Table—Continued

Name, Model and Tonnage	ENGINE												BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Clydesdale 18–¾–1¼	3	1/4	1 1/16	1/16	V	15	2	12	2	41	3/4	V	11 1/4	2 1/2	1/4	4	11 1/2	2 1/2	1/4	4	95	34
Clydesdale 10–¾–1¼	3	1/4	1 1/16	1/16	V	9	2	9	2	41	3/4	V	11 1/4	2 1/2	1/4	4	11 1/4	2 1/2	1/4	4	109	34
Collier 18–1	3	1/4	1	....	V	9 3/4	2	10 1/2	1 1/4	40	1	F	24	3 1/2	1/4	4	24	3 1/2	1/4	4	106	35 1/4
Collier 19–1½	3	1/4	1	....	V	9 3/4	2	10 1/2	1 1/4	40	1	F	24	3 1/2	1/4	4	24	3 1/2	1/4	4	120	32
Collier 21–2	3	1/4	1 1/2	....	V	6	1 1/2	10 1/2	1 1/4	40	1	F	27 1/2	3 1/2	1/4	4	27 1/2	3 1/2	1/4	4	132	32
Collier 22–2½	3	1/4	1 1/2	....	V	6	1 1/2	10 1/2	1 1/4	40	1	F	27 1/2	3 1/2	1/4	4	27 1/2	3 1/2	1/4	4	144	32
Commerce T–1500	3	1/4	1	1/4	V	10	2	10	2	44	3/4	V	50	2	1/4	2	48 1/2	2	1/4	2	92 3/4	34
Commerce 12–3000	3	1/4	1	1/4	V	10	2	10	2	44	3/4	V	45	2 1/4	1/4	2	43	2 1/4	1/4	2	99 3/4	34
Commerce 16–4000	3	1/4	1	1/4	V	10	2	10	2	44	3/4	V	50 3/4	2 1/2	1/4	2	48	2 1/4	1/4	2	108 3/4	34
Commerce 18–5000	3	1/4	1 1/4	1/4	V	6	1 1/2	11	1 1/2	33	1 1/4	F	50 3/4	2 1/2	1/4	2	48	2 1/4	1/4	2	128 3/4	34
Concord A–2	4	1/4	1 1/4	1/4	H	11	2 3/8	9 1/2	1 1/2	34	2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	108 1/4	32 1/4
Concord AX–2	4	1/4	1 1/4	1/4	H	11	2 3/8	9 1/2	1 1/2	34	2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	122 3/4	32 1/4
Concord B–3	4	1/4	1 1/4	1/4	H	11	2 3/8	9 1/2	1 1/2	34	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	122 1/2	32 1/4
Concord BX–3	4	1/4	1 1/4	1/4	H	11	2 3/8	9 1/2	1 1/2	34	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	155 3/8	32 1/4
Corbitt E–1	3	1/4	1	1/4	....	8	2	14	2	38	5/8	V	19	2	1/4	2	19	2	1/4	2	105	34
Corbitt D–1½	3	1/4	1 1/4	1/4	....	8	2	14	2	38	5/8	V	45 1/4	2	1/4	1	45 1/4	2	1/4	1	120	34
Corbitt C–2	3	1/4	1 1/4	1/4	....	14	1 1/4	13	1 1/4	36	1 1/4	F	51 1/2	2 1/4	1/4	1	51 1/2	2 1/4	1/4	1	138	35
Corbitt B–2½	3	1/4	1 1/4	1/4	....	14	1 1/4	13	1 1/4	36	1 1/4	F	51 1/2	2 1/4	1/4	1	51 1/2	2 1/4	1/4	1	138	35
Corbitt AA–5	3	1/4	1 1/2	1/4	....	13	1 1/4	8	1 1/4	36	2	V	69 1/4	3	1/4	1	69 1/4	3	1/4	1	160	38
Corbitt A–3½	3	1/4	1 1/4	1/4	....	13	2	14	2	36	1 1/4	V	64	2 1/2	1/4	1	64	2 1/2	1/4	1	160	35
Cyclone A–3000	3	1/4	1	1	V	16	2	16	2	32 1/2	1 1/4	F	21 1/4	2 1/2	1/4	4	19 3/4	2 1/4	1/4	4	113	34
Dart S–1½	3	1/4	1 1/4	1 1/8	H	11	2	8	1 3/4	36	1	F	19	1 3/4	1/4	2	19	1 3/4	1/4	4	112	34
Dart M–2½	4	1/4	1 1/4	1 1/8	H	11	2	13	1 1/4	35	2	F	10	2 1/2	1/4	2	19	3 1/2	1/4	4	124	34
Dart W–3½	4	1/4	1 1/2	2	H	11	2	12	1 1/2	36	2	F	28	2 3/4	1/4	4	28	2 3/4	1/4	4	144	38
Day-Elder AS–1	3	1/4	1 1/4	1 1/2	V	9	2	9 1/2	2	40	5/8	V	19	2	1/4	4	19	2	1/4	4	108	35
Day-Elder B–1½	3	1/4	1 1/4	1 1/2	V	9	2	9 1/2	2	40	5/8	V	19	2	1/4	4	19	2	1/4	4	120	35
Day-Elder D–2	3	1/4	1 1/4	1 1/2	V	4	4	9	1 3/8	35	5/8	V	45	2	1/4	2	45	2	1/4	2	125	35
Day-Elder C–2½	3	1/4	1 1/4	1 1/2	V	10 1/2	2	12	1 3/8	36 3/4	2	F	52	2 1/4	1/4	2	52	2 1/4	1/4	2	123	35
Day-Elder F–3½	3	1/4	1 1/2	1 3/4	V	6 3/4	1 3/4	12	1 1/4	35 1/4	1 1/2	F	56 1/2	2 1/2	1/4	2	56 1/2	2 1/2	1/4	2	148	35
Day-Elder E–5	4	1/4	1 1/2	1 3/4	V	12 1/2	2	10	1 3/8	38 1/2	1 1/2	F	69	3	1/4	2	69	3	1/4	2	155	37
Dearborn BW–2	3	....	1	....	....	8 3/4	2	6	1 3/4	37	1	F	18	2 1/2	1/4	2	18	1 1/2	1/4	2	130	32
Dearborn F–1½	3	....	1	....	....	12	2	8	1 3/4	37	1	F	16 1/2	2 1/2	1/4	2	16 1/2	1 1/2	1/4	2	96 1/2	34
Dearborn C–1	3	....	3/4	....	....	....	....	....	....	....	....	....	38	2	1/4	1	38	2	1/4	1	107	32
Defiance B–1½	3	1/4	1	1	V	10	2	8	2	40 3/4	1 1/4	F	45	2 1/2	1/4	1	43 1/4	2 1/4	1/4	1	116	34
Defiance C–2	3	1/4	1	1	V	10	2	8	2	40 3/4	1 1/4	F	54 1/16	2 1/2	1/4	1	52 1/2	2 1/4	1/4	1	116	34
Defiance D	3	1/4	1	1	V	10	2	8 1/2	1 1/4	40 3/4	1 1/4	F	45	2 1/2	1/4	1	43 1/4	2 1/4	1/4	1	120	34
Defiance E	3	1/4	1	1	V	10	2	8 1/2	1 1/4	40 3/4	1 1/4	F	54 1/16	2 1/2	1/4	1	52 1/2	2 1/4	1/4	1	120	34
Denby 31–¾	3	1/4	1	1	....	6	2 3/8	19	2 3/8	38 5/8	1 1/4	F	49	2 1/2	1/4	2	47 1/2	2 1/4	1/4	2	97 5/8	34
Denby 33–1½	3	1/4	1	1	....	9	2	12	2	41 1/4	3/4	V	8 1/2	4	1/4	2	46 1/2	1 1/2	1/4	2	120	33 1/4
Denby 34	3	1/4	1	1	....	9	2	12	2	41 1/4	3/4	V	53 1/16	3	1/4	2	50 11/16	2	1/4	2	127	34
Denby 35–2½	3	1/4	1 1/4	1 1/4	....	8	2	14 1/4	1 1/4	34 1/4	1 1/4	F	8 1/2	4	1/4	2	51	3	1/4	2	143 3/4	33 1/4
Denby 27–4	3	1/4	1 1/4	1 1/4	....	13	1 3/4	16 1/4	1 1/4	38 1/2	1 1/2	F	8 1/2	4	1/4	2	58	2 1/2	1/4	2	140	34
Denby 210–5	3	1/4	1 1/4	1 1/4	....	13	1 3/4	16 1/4	1 1/4	38 1/2	1 1/2	F	8 1/2	4	1/4	2	89	2 1/4	1/4	2	140	34
Dependable Dispatch A-1¼	4	1/4	1	1/8	V	14	2 1/4	15	1 1/4	37 1/2	2	F	53 1/4	2 1/4	1/4	1	38 1/4	2 1/4	1/4	1	108	33 1/2
Dependable C–2	4	1/4	1	1/8	V	14	2 1/4	15	1 1/4	37 1/2	2	F	53 1/2	2 1/2	1/4	1	38 1/2	2 1/2	1/4	1	121	33
Dependable D–2½	4	1/4	1 1/4	1/8	V	10	2 1/4	11 1/2	1 1/4	37 1/2	2	F	53 1/2	2 1/2	1/4	1	38 1/2	2 1/2	1/4	1	140	33
Dependable E–3	4	1/4	1 1/4	1/8	V	10	2 1/4	11 1/2	1 1/4	37 1/2	2	F	63	2 1/2	1/4	1	49	2 1/2	1/4	1	152	33
Dependable G–3½	4	1/4	1 1/4	1/8	V	13	2	13	1 1/4	37 1/2	2	F	63	2 1/2	1/4	1	49	2 1/2	1/4	1	170	33
Diamond T–O–3–1	3	1/4	1	1 1/4	V	9	1 1/4	6	1 1/4	35	2	F	48	2 1/2	1/4	2	33	2 1/2	1/4	2	100	34
Diamond T–FS&T–1½	3	1/4	1	1 1/4	V	9	1 1/4	6	1 1/4	35	2	F	11 1/2	3 1/4	1/4	4	11 1/2	3 1/2	1/4	4	Opt	34
Diamond T–U–2½	3	1/4	1 1/4	1 1/4	V	9	1 1/4	6	1 1/4	35	2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	34
Diamond TK–3½	3	1/4	1 1/4	1 1/2	V	10	1 1/2	10	1 1/2	35	2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	Opt	37
Diamond T–EL–5	3	1/4	1 1/4	1 1/2	V	10	1 1/2	10	1 1/2	35	2	F	18	4	1/4	4	17 11/16	4	1/4	4	Opt	37
Diamond T–S–5	3	1/4	1 1/2	1 3/4	V	9	2	21	2	40 3/8	2	F	18	4	1/4	4	17 11/16	4	1/4	4	Opt	37
Diehl A	3	....	1	1	....	....	....	....	....	....	....	....	28	2 1/2	1/4	2	27	2	1/4	2	90	.....
Dodge Brothers–½	3	1/4	1 1/8	1/4	....	9	1 1/2	7 1/4	1 1/16	31	1	R	19 1/4	2 1/4	1/4	4	14 3/8	1 3/4	1/4	4	47 1/8	38
D–Olt	3	1/4	1	1/8	H	18	2	18	2	36	1	F	54	3	1/4	2	42	3	1/4	2	240	34
Dorris K–4–2½	3	1/4	1 1/4	1 1/4	V	2 1/4	1 1/2	6 1/4	1 1/4	42 7/8	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	142 3/4	34
Dorris K7–3½	3	1/4	1 1/4	1 1/4	V	2 1/4	1 1/2	6 1/4	1 1/4	42 7/8	2	F	15 3/4	3 3/4	1/4	4	15 3/4	3 3/4	1/4	4	178 1/2	36
Double Drive B3	4	1/4	1 1/4	1/4	....	....	....	....	....	....	....	....	29	2 1/4	1/4	1	29	2 1/4	1/4	1	124	36
Douglas GW–1½	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	45	2 1/2	1/4	2	44	2 1/4	1/4	2	118	31
Douglas G–1½	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	46	2 1/2	1/4	2	44	2 1/4	1/4	2	118	31
Douglas H–2	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	55	2 1/2	1/4	2	52	2 1/4	1/4	2	118	31
Douglas HW–2	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	54	2 1/2	1/4	2	42	2 1/4	1/4	2	118	31
Douglas I–3	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	58	2 1/2	1/4	2	44	2 1/4	1/4	2	132	31
Drake T–60	3	1/4	1 1/4	1 1/2	V	9	1 1/2	8	1 1/4	32	1 1/4	F	42 1/4	2 1/2	1/4	1	37	2 1/2	1/4	1	106	34
Duplex E–3½	3	1/4	1 1/4	1	....	....	....	....	....	....	....	....	9 1/2	2 1/2	1/4	2	5 1/2	2 1/2	1/4	2	126	39 1/8
Duplex A	....	....	1 1/4	1 1/2	....	....	....	....	....	....	....	....	....	2	....	4	....	2	....	4	121	34
Duty 2	3	1/4	1 1/2	1 1/4	V	8	2 1/4	18	2	38	1	F	45	2 1/2	1/4	1	40	1 3/4	1/4	1	117	32
Eagle 100–2	4	1/4	1 1/4	1	....	14	2	16	1 1/4	33 3/8	2	....	49 1/2	3	1/4	1	46	2	1/4	1	Opt	36
Eugol 752–1	3	1/4	1 3/4	1/8	V	8	1 3/4	15 1/2	1 1/4	32 3/4	1 1/2	F	11	2 1/2	1/4	2	11	2 1/2	1/4	2	102	30
Fageol 1½–2	3	1/4	1 1/4	1 1/2	V	15 1/2	1 1/4	11 1/2	1 1/4	31	5/8	V	19 1/4	1 3/4	1/4	2	19 1/4	1 3/4	1/4	2	120	30
Fageol 2½–3	3	1/4	1 1/4	1 1/4	V	10	1 1/4	14 3/4	1 1/4	34 3/4	1 1/2	F	13 1/4	3 1/2	1/4	2	13 1/4	3 1/4	1/4	2	141	34
Fageol 3½–4	3	1/4	1 5/8	2	V	9	1 1/2	17 1/2	1 1/2	40 1/2	1 1/2	F	15 1/2	3 3/4	1/4	2	15 1/2	3 3/4	1/4	2	159 1/2	37 1/4
Fageol 5–6	3	1/4	1 5/8	2	V	9	1 1/2	17 1/2	1 1/2	40 1/2	1 1/2	F	18	4	1/4	2	18	4	1/4	2	161 1/4	37 1/4
Fargo O17, P18–2,P19–2, P20–2	3	1/4	....	1 1/8	....	10	2	10	2	42	5/8	V	52	2	1/4	2	50 1/2	2	1/4	2	132	33
Fargo R	3	1/4	....	1 1/8	....	10	2	10	2	42	5/8	V	52	3	1/4	2	50 1/2	2	1/4	2	132	33
Federal SD–1–1½	4	1/4	1	1 1/16	V	15	1 1/2	7	1 1/2	35 5/8	1	F	10 11/16	3	1/4	4	10 11/16	3	1/4	4	112	34
Federal TE–1½–2	3	1/4	1 1/4	1 1/2	V	7	1 1/4	6	1 1/2	32 1/2	1	F	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	118	34
Federal UE–2–2½	3	1/4	1 1/4	1 1/2	V	7	1 1/4	6	1 1/2	32 1/2	1	F	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	134	34
Federal WE–3½–4	3	1/4	1 1/4	1 1/2	V	12 1/2	1 1/4	9	1 3/4	39	1 1/2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	154	38
Federal XD–2–5–6	4	1/4	1 11/16	2	V	10	2	14 1/16	1 7/8	40 7/8	1 3/4	F	17 11/16	4	1/4	4	17 11/16	4	1/4	4	154	38
Federal Light Duty	3	1/4	1 1/4	1 1/2	V	7	1 1/4	6	1 1/2	32 1/2	1	F	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	86	34
Federal Heavy Duty	3	1/4	1 1/4	1 1/2	V	12 1/2	1 1/4	9	1 3/4	39	1 1/2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	82	38
Ford T–1	3	1/4	1.06	1 1/16	H	4	2	.....	1 3/4	27	1 1/8	F	23 3/8	1 1/8	1/16	1	12	1 1/8	1/16	2	60	23
Front Drive C–1½	4	1/4	1	1 1/2	....	....	....	....	....	....	....	....	13	3	1/4	2	15	3	1/4	2	124	36
F. W. D. B–3	3	1/4	1 11/16	1/16	....	4	2	5	1 1/2	40	1 7/8	F	27	3 1/2	1/4	1	43	2 3/4	1/4	2	136	36
Garford 15¾	4	1/4	1	....	V	....	....	....	....	34	1 1/2	F	11	2 1/2	1/4	4	11	2 1/2	1/4	4	96	34
Garford 25B–1¼	3	1/4	1 1/4	....	H	....	....	....	....	37 1/16	1	F	11 3/4	3 1/4	1/4	4	11 3/4	3 1/4	1/4	4	108	34
Garford 70H–2	4	1/4	1 1/4	....	V	....	....	....	....	34 1/16	2	F	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	121	34
Garford 77D–3½	4	1/4	1 1/4	....	V	....	....	....	....	39	2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	144	36
Garford 68D–5	4	1/4	1 1/2	....	V	....	....	....	....	41 1/16	2	F	17 3/4	4	1/4	4	17 3/4	4	1/4	4	150	36
Garford 150–A–7½	4	1/4	1 1/2	....	V	....	....	....	....	41 1/16	2	F	10 1/2	4	3/8	2	21 3/8	4	1/4	4	150	36
Gary F–1–1½	4	1/4	1 1/4	3/8	....	....	....	....	....	....	....	....	10 3/4	3	1/4	2	11	3	1/4	2	97 3/8	34
Gary I–2	4	1/4	1 1/4	3/8	....	....	....	....	....	....	....	....	11 1/4	3 1/4	1/4	2	24	3 1/4	1/4	2	120	34
Gary J–2½	4	1/4	1 1/4	3/8	....	....	....	....	....	....	....	....	27	3 1/2	1/4	2	27	3 1/2	1/4	2	120	34
Gary K–3½	4	1/4	1 1/4	3/8	....	....	....	....	....	....	....	....	32	3 3/4	1/4	2	32	3 3/4	1/4	2	148	36 1/4
Gary M–5	4	1/4	1 1/2	3/8	....	....	....	....	....	....	....	....	36 1/2	4	1/4	2	36 1/2	4	1/4	2	168	39
Gersix K–2½	4	1/4	1 1/4	1 1/4	H	12	2	14	1 1/4	36	2	....	20	2 1/2	1/4	4	47	2 1/4	1/4	2	131	34

Replacement Table—Continued

Name, Model and Tonnage	ENGINE												BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Gersix M–1½	4	¼	1¼	1¼	H	12	2	14	1¼	36	2	....	46	2	¼	2	46	2	¼	2	114	32
Gersix L–3½	4	¼	1¼	1¼	H	13½	2	16	1¼	36	2	....	56	2½	¼	2	56	2½	¼	2	144	36½
Giant 15A–1½	3	1/16	1	....	....	....	....	....	....	....	....	....	19	2	1/16	4	19	2	1/16	4	116½	32
Giant 16–2½	3	1/16	1¼	....	....	....	....	....	....	....	....	....	45½	2	1/16	2	45½	2	1/16	2	140½	33
Giant 17–3½	3	1/16	1½	....	....	....	....	....	....	....	....	....	56½	2½	¼	2	46½	2½	¼	2	183½	36
G.M.C. K–15	4	1/16	1¼	1 5/8	V	8¾	1½	8 1/16	1½	35 5/8	11/16	V	49 5/8	2 1/8	1/16	2	47	2 3/8	1/16	2	89	34
G.M.C. K–16	4	1/16	1¼	1 5/8	V	8¾	1½	8 1/16	1½	35 5/8	11/16	V	49 5/8	2 1/8	1/16	2	47	2 3/8	1/16	2	89	34
G.M.C. K–20	4	¼	1¼	1 5/8	V	10	1¾	9½	1¾	37 7/8	11/16	V	49 5/8	2 1/8	1/16	2	47	2 3/8	1/16	2	191	33
G.M.C. K–41	4	¼	1¼	1 5/8	V	10	1¾	9½	1¾	37 7/8	11/16	V	13	3½	¼	4	13	3½	¼	4	Opt	33
G.M.C. K–71	4	¼	1¼	1 5/8	V	11¾	1¾	9½	1¾	37 7/8	11/16	V	15½	3¾	¼	4	15⅛	3¾	¼	4	Opt	38
G.M.C. K–101	4	¼	1¼	1 5/8	V	11¾	1¾	9½	1¾	37 7/8	11/16	F	17¾	4	¼	4	17¾	4	¼	4	Opt	38
Gramm-Pioneer 10 Speed	3	1/16	1	1½	V	12	2¼	14½	2¼	29	1	F	48	2	1/16	2	26	2	1/16	1	97	30⅛
Gramm-Pioneer 15–1½	3	1/16	1	1½	V	10¼	2	6	2	39	1¼	F	48½	2	1/16	2	45 7/8	1½	1/16	2	120	32
Gramm-Pioneer 65–1½	3	1/16	1	1½	V	10¼	2	6	2	39	1¼	F	19¾	1¾	1/16	4	19¾	1¾	1/16	4	120	32
Gramm-Pioneer 20–2	3	1/16	1¼	1½	V	4½	1½	12	1½	32	2	F	45	2	1/16	4	45	2	1/16	4	126	32
Gramm-Pioneer 30–3	3	¼	1¼	1½	V	11	11½	9	1½	33¾	2	F	22¾	2¼	¼	4	22¾	2¼	¼	4	129¾	36
Gramm-Pioneer 75P–3½	3	¼	1¼	1½	V	....	....	....	....	....	....	....	22¾	2¼	¼	4	22¾	2¼	¼	4	129¾	36
Gramm–Pioneer 40–4	3	¼	1¼	1½	V	11	1½	9	1½	33¾	2	F	28¾	2¾	¼	4	28¾	2¾	¼	4	144	36
Gramm-Pioneer 50–5–6	3	¼	1½	1¾	V	23¼	2	13¾	1⅞	40¾	2	F	32M	2¾	¼	4	32 11/16	2¾	¼	4	132	36
G. W. W.	3	¼	1¼	1¾	V	12	1¾	11	1¾	37	2	F	49	2½	¼	2	47	1½	1/16	2	89	32
Hall 2-Worm–2½	3	1/16	....	....	....	8	1¼	12½	1¼	32	1¼	F	11½	3	¼	4	11½	3	¼	4	144	38
Hall 3½-Worm	3	1/16	....	....	....	12½	1¾	15½	1¼	38 1/8	1½	F	15	3¾	¼	4	15	3¾	¼	4	180	39
Hall 5-Worm	3	1/16	....	....	....	12½	1¾	15½	1¼	38½	1½	F	18	4	¼	4	18	4	¼	4	144	39
Hall 7-Chain	3	1/16	....	....	....	12½	1¾	15½	1¼	38 1/8	1½	F	18	4	¼	4	18	4	¼	4	144	39
Harvey WOA–2	4	¼	1¼	2	V	11	2	14	1¾	35 5/8	2	F	45	2	¼	2	45	2	¼	2	136	32
Harvey WFA–2½	4	¼	1¼	2	V	11	2	14	1¼	35 5/8	2	F	50	2¼	¼	2	50	2¼	¼	2	136	32
Harvey WHA–3½	4	¼	2	2	V	12	2	14	1¼	35 5/8	2	F	56½	2½	¼	2	56½	2½	¼	2	144	35
Hendrickson N–2½	3	¼	1¼	1/16	....	....	....	....	....	....	....	....	12	3½	1/16	4	12	3½	1/16	4	Opt	32½
Hendrickson M–3½	3	¼	1¼	1/16	....	....	....	....	....	....	....	....	16	3¾	1/16	4	16	3¾	1/16	4	Opt	36
Hendrickson K–5	3	¼	1½	1/16	....	....	....	....	....	....	....	....	18	4	1/16	4	18	4	1/16	4	Opt	38
Higrade A18–1	3	1/16	1	1	V	9	2	7	2	32	½	R	12	1½	¼	2	12	1½	¼	2	85	32
Higrade B20–1½	3	1/16	1⅛	1⅛	V	9	2	7	2	32	½	R	18	2	¼	2	18	2	¼	2	100	32
Hurlburt A1½–2	3	....	1¼	1	....	....	....	....	....	....	....	....	22	2	¼	2	22	2	¼	2	132	35½
Hurlburt B2½	3	1/16	1¼	1	....	....	....	....	....	....	....	....	24	2½	¼	2	23	2½	¼	2	154	34
Hurlburt C3½–4	3	¼	1½	1¼	....	....	....	....	....	....	....	....	26	3	¼	2	25	3	¼	2	144½	34
Hurlburt D5–5½	3	¼	1½	1¼	....	....	....	....	....	....	....	....	28	3	¼	2	27	3	¼	2	144½	34
Huron–Erie 1½	4	....	1	1½	....	....	....	....	....	....	....	....	15	3	¼	2	50	2	1/16	2	121	33
Huron-Michigan 2½	4	....	1¼	1 11/16	....	....	....	....	....	....	....	....	15	3	¼	2	50	2½	1/16	2	145	33
Indiana 12–1½	3	¼	1	....	....	17	1¼	14	1¼	38½	1	....	17½	2	1/16	4	17½	2	1/16	4	108	32
Indiana 20–2	3	¼	1¼	....	....	6	1¼	13	1¾	26 5/8	1½	....	44	2	¼	2	44	2	¼	2	126	33
Indiana 25–2½	3	¼	1¼	....	....	6	1¼	13	1¾	26 5/8	1½	....	51	2¼	¼	2	51	2¼	¼	2	138	33
Indiana 35–3½	3	¼	1¼	....	....	6	1¼	13	1¼	26 5/8	1½	....	56	2½	¼	2	56	2½	¼	2	144	34½
Indiana 51–5	3	¼	1½	....	....	10	1½	17½	1½	26 5/8	1½	....	68	3	¼	2	68	3	¼	2	156	37½
International S–1500 lbs.–Speed Tr	3	¼	1¼	1¼	V	9¾	2¼	17¾	2¼	30¼	1	F	38	2	1/16	2	36	2	1/16	2	90	34
International 21–2000 lbs.	3	¼	1¼	1¾	V	6	1½	3½	1⅛	38 1/8	1⅛	F	43¾	2¼	1/16	2	43¾	2¼	1/16	2	75 11/16	34
International 31–3000 lbs.	3	¼	1¼	1¾	V	6	1½	3½	1⅛	38 1/8	1⅛	F	43¾	2¼	1/16	2	43¾	2¼	1/16	2	106½	34
International 41–4000 lbs.	3	¼	1¼	1¾	V	6	1½	3½	1⅛	38 1/8	1⅛	F	50 5/8	2¼	1/16	2	50 5/8	2¼	1/16	2	111 1/16	32¼
International 61–6000 lbs.	4	¼	1¼	1¾	V	9	2¼	14½	2	....	....	....	50 5/8	2¼	1/16	2	50 5/8	2¼	1/16	2	118 11/16	34
International S–1500 lbs.–Speed Tr	4	¼	1¼	1¾	V	9	2¼	14½	2	....	....	....	73 1/16	2½	1/16	2	73 1/16	2½	1/16	2	147 7/8	34
Jackson B–3½	3	1/16	1¼	1½	V	11	....	....	....	32½	1¼	F	58½	3½	¼	2	....	....	....	....	150	36
Kalamazoo G–1	3	¼	2 1/16	1 1/16	....	15½	1½	8	1½	40	1½	F	50	2½	1/16	1	34	2½	1/16	1	120	32½
Kalamazoo LG	3	¼	2 1/16	1 1/16	....	6	1½	16	1¼	39	1½	F	50	2½	1/16	1	34	2½	1/16	1	120	32½
Kalamazoo NH	3	¼	2 1/16	1 1/16	....	20	1¾	19½	1½	42	2	F	52	2¼	¼	1	52	2¼	¼	1	144	33
Kalamazoo HD	3	¼	2 1/16	1 1/16	....	20	1¾	19½	1½	42	2	F	52	2¼	¼	1	52	2¼	¼	1	120	33
Kalamazoo SK	3	¼	2 1/16	1 1/16	....	20	1¾	19½	1½	42	2	F	57	2½	¼	1	57	2½	¼	1	152	36
Kalamazoo OK	3	¼	2 1/16	1 1/16	....	20	1¾	19½	1½	42	2	F	68	3	¼	1	68	3	¼	2	152	36
Kearns H–1	3	1/16	1	1/16	H	16	2	16	2	33	1	F	42	2	1/16	1	21	2	1/16	2	90	34
Kearns N–2	3	1/16	1	1/16	H	18	2	18	2	33	1	F	45	2½	1/16	1	22	2¼	1/16	2	120	34
Kelly-Springfield K31–1½	4	¼	1	1/16	V	7	1½	13	1½	54½	1	V	16¾	1⅞	1/16	4	16¾	1⅞	1/16	4	138	34
Kelly-Springfield K34–1½	4	¼	1	1/16	V	7	1½	13	1½	54½	1	V	17⅜	1⅞	1/16	4	17⅜	1⅞	1/16	4	138	34
Kelly-Springfield K35–2½	4	¼	1	1/16	V	7	1½	13	1½	55½	1	V	16¾	1⅞	1/16	4	16¾	1⅞	1/16	4	138	34
Kelly-Springfield K38–2½	4	¼	1	1/16	V	7	1½	13	1½	55½	1	V	17⅜	1⅞	1/16	4	17⅜	1⅞	1/16	4	138	34
Kelly-Springfield K40–3½	4	¼	1¼	1/16	V	5 1/16	1 5/8	24	1½	63 5/8	1	V	21	2 7/8	1/16	4	21	2 3/8	1/16	4	145	38
Kelly-Springfield K41–3½	4	¼	1¼	1/16	V	5 1/16	1 5/8	24	1½	60 5/8	1	V	3 1/16	4½	¼	12	58	2½	1/16	2	144	36
Kelly-Springfield K42–3½	4	¼	1¼	1/16	V	5 1/16	1 5/8	24	1½	60 5/8	1	V	27½	2¾	¼	4	27½	2¾	¼	4	144	36
Kelly-Springfield K50–5	4	¼	1¼	1/16	V	5 1/16	1 5/8	24	1½	63 5/8	1	V	21	2 7/8	1/16	4	21	2 3/8	1/16	4	145	38
Kelly-Springfield K60–6	4	¼	1¼	1/16	V	5 1/16	1 5/8	24	1½	63 5/8	1	V	21	2 7/8	1/16	4	21	2 3/8	1/16	4	145	38
Kelly-Springfield K61–5 to 7	4	¼	1¼	1/16	V	5 1/16	1 5/8	24	1½	60 5/8	1	V	3 1/16	4½	¼	12	58	2½	1/16	2	144	36
Keystone 40–2	3	¼	1	1/16	V	8	2 1/8	8	2 1/8	38	1	F	50½	3	1/16	1	46¾	2	1/16	1	124	33
Kimball AB–2	3	¼	1¼	1¾	V	6	1½	....	....	39	2	F	45	2	¼	2	45	2	¼	2	135	34
Kimball AC–2½	3	¼	1¾	1¾	V	6	1½	....	....	39	2	F	22½	2¼	¼	4	22½	2¼	¼	4	152	34
Kimball AK3	3	¼	1¼	1¾	V	6	1½	....	....	39	2	F	22½	2¼	¼	4	22½	2¼	¼	4	152	34
Kimball AE–4	3	¼	1½	1¾	V	9	1¾	....	....	42	2	F	56	2½	¼	2	56	2½	¼	2	171	36
Kimball AF–5	3	¼	1½	1¾	V	9	1¾	....	....	42	2	F	69	3	¼	2	69	3	¼	2	171	36
Kissel 1 Ton	3	1/16	....	1¼	....	12¼	1¾	10	1½	46¾	2	F	11	3	¼	4	11	3	¼	4	101¼	34
Kissel-Utility 1½	3	1/16	....	1¼	....	12¼	1¾	10	1½	46¾	2	F	19	2	1/16	4	19	2	1/16	4	120	34
Kissel-Freighter 2	3	1/16	....	1¼	....	12¼	1¾	10	1½	49	2	F	14	3½	¼	4	14	3½	¼	4	144	34
Kissel-Heavy-Duty–3½	3	1/16	....	1¼	....	13¾	1¾	10	1½	52¼	2	F	56	2½	1/16	2	56	2½	1/16	2	156	36
Kissel-Goliath 5	3	1/16	....	1¼	....	....	....	....	....	55	2	F	56	2½	1/16	2	56	2½	1/16	2	168	36
Kleiber 1	3	1/16	1¼	1¾	....	13	1½	16	1¼	36	¾	....	12	3¼	¼	4	12	3¼	¼	4	120	34
Kleiber 1½	3	1/16	1¼	1¾	....	13	1½	16	1¼	38	1¼	....	45	3¼	¼	4	12	3¼	¼	2	132	34
Kleiber 2	3	1/16	1¼	1¾	....	13	1½	16	1¼	40	1¼	....	13½	3½	¼	4	13½	3½	¼	4	144	34
Kleiber 2½	3	1/16	1¼	1¾	....	13	1½	16	1¼	40	1¼	....	52	3½	¼	4	13½	3½	¼	2	150	34
Kleiber 3½	3	1/16	1¼	1¾	....	13	1¾	16	1¼	40	1¼	....	16	3¾	¼	4	16	3¾	¼	4	156	38
Kleiber 5	4	¼	1½	1¾	....	13	1¾	16	1¼	43	1¼	....	18	4	¼	4	18	4	¼	4	168	38
Koehler D–1½	3	1/16	1	1/4	V	9¼	2	12½	2	37½	1¼	....	40	1¾	1/16	2	40	1¾	1/16	2	113¼	34
Koehler M–2½	4	1/16	1¼	1/4	V	5¼	1 5/8	5¼	1¼	40¼	1¾	....	13	3½	¼	4	13	3½	¼	4	141¾	34
Koehler MCS–2½	4	1/16	1¼	1/4	V	5¼	1 5/8	5¼	1¼	40¼	1¾	....	13	3½	¼	4	13	3½	¼	4	129¾	34
Koehler F–3½	4	1/16	1¼	1/4	V	9	1 5/8	5¼	1¼	....	....	....	15½	3¾	¼	4	15½	3¾	¼	4	139½	34
Koehler MT–5—Tractor 5	4	1/16	1¼	1/4	V	5¼	1 5/8	5¼	1¼	40¼	1¾	....	13	3½	¼	4	13	3½	¼	4	....	34
Lange B	3	1/16	1	1 5/8	V	3½	2¼	11	2	36½	¾	F	30	2	¼	2	18	3	¼	4	114	37
Lange E–2½	3	¼	1	1 3/8	V	9	1½	15½	1½	42	1½	F	18	3½	¼	4	18	3½	¼	4	138	33
Larrabee U–1½	3	1/16	1	....	V	9	2	9	2	38	3/8	V	48	2	¼	2	48	2	¼	2	108	34
Larrabee A.B & L–'20–3½	3	1/16	1¼	....	V	9	1½	6	1¼	36	1½	....	60	2½	¼	2	60	2½	¼	2	168	36
Larrabee C,D & K–'20–2½	3	1/16	1¼	....	V	8½	2	17½	2	44	2	F	54	2¼	¼	2	54	2¼	¼	2	150	36
Larrabee W–5	3	1/16	1½	....	V	6	1¼	6	1¼	36	1¼	F	72	3	¼	2	72	3	¼	2	152	36
Larrabee T	3	1/16	1¼	....	V	9	1½	6	1¼	36	1½	F	72	3	¼	2	72	3	¼	2	157	36
Luedinghaus K2	3	¼	1¼	1 11/16	....	9	1¾	5	1¼	.....	1½	F	53.4	2½	¼	2	38½	2½	¼	2	120	34
Luedinghaus K2–LS	3	¼	1¼	1 11/16	....	9	1¾	5	1¼	.....	1½	F	53.4	2½	¼	2	38½	2½	¼	2	145½	34

Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Maccar L	3	3/16	1 1/4	1 5/8	V	3 1/4	1 1/2	10	1 1/4	30 3/4	3/4	F	11 5/8	3 1/4	1/4	4	11 5/8	3 1/4	1/4	4	128 1/8	34
Maccar H	4	1/4	1 1/4	1 5/8	V	9 1/2	1 1/2	15 1/2	1 1/2	41 1/2	1 1/2	F	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	141 1/2	34
Maccar HA	4	1/4	1 1/4	1 5/8	V	11 3/4	1 1/2	17	1 1/2	41 1/2	1 1/2	F	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	143 5/8	34
Maccar M-3	4	1/4	1 1/4	1 5/8	V	11 1/4	1 1/2	15 1/2	1 1/2	41 1/2	1 1/2	F	14 3/4	3 3/4	1/4	4	14 3/4	3 3/4	1/4	4	155 1/2	34
Maccar G	4	1/4	1 1/2	1 7/8	V	10 1/2	2	20 1/2	2	40 3/4	2	F	18	4	1/4	4	18	4	1/4	4	166 5/8	37 1/2
MacDonald A-7½	4	1/4	1 1/4	....	V	12	2	21	1 1/4	35	2	F	70	3	1/4	1	34	3	1/4	1	....	....
Mack AB-1½, 2, 2½-Ton-Chain	4	1/4	1 1/4	1 1/2	V	9 1/2	1 1/2	4 3/4	1 1/2	33	1 1/2	F	12 1/4	4	1/4	2	16 1/2	2 1/2	1/4	4	Opt	33 1/4
Mack Dual Reduction-1½-2,2½	4	1/4	1 1/4	1 1/2	V	9 1/2	1 1/2	4 3/4	1 1/2	33	1 1/2	F	18 1/4	3 1/2	1/4	4	12	6	1/4	4	Opt	33 1/4
Mack AB-Tractor 5 Ton	4	1/4	1 1/4	1 1/2	V	9 1/2	1 1/2	4 3/4	1 1/2	33	1 1/2	F	12 1/4	4	1/4	2	16 1/2	2 1/2	1/4	4	77	33 1/2
Mack AC-3½ to 7½ Ton	4	1/4	1 1/2	1 1/2	V	5 3/4	2 1/4	4 3/4	1 1/2	96	1	V	16 1/8	3	1/4	4	20 1/2	3 1/2	1/4	4	Opt	37 1/2
Mack AC-Tractor 7 to 15 Ton	4	1/4	1 1/2	1 1/2	V	5 3/4	2 1/4	4 3/4	1 1/2	96	1	V	16 1/8	3	1/4	4	20 1/2	3 1/2	1/4	4	87	37 1/2
Master JI-1½	4	1/4	1 1/4	2	H	13 1/2	2	12 1/2	1 1/4	96	1	F	74 1/2	2 1/2	1/8	1	74 1/2	2 1/4	1/4	1	117 3/4	34 1/4
Master JW-1½	4	1/4	1 1/4	11/16	V	13 1/2	12	12 1/2	1 1/4	30 1/2	1	F	12	3 1/4	1/4	2	12	3 1/4	1/4	2	117 3/4	34 1/4
Master M-2½	4	1/4	1 1/4	1 1/16	V	13 1/2	2	12 1/2	1 1/4	30 1/2	1	F	74	2 1/2	1/4	1	74 1/2	2 1/4	1/4	1	117 3/8	34
Master O 2½	4	1/4	1 1/4	1 1/16	V	13 1/2	2	11 1/2	1 1/4	33	1 1/4	F	75 1/2	2 1/2	1/8	1	74 1/2	2 1/4	1/4	1	156 3/8	34
Master W-2½	4	1/4	1 1/4	1 1/16	V	13 1/2	2	12 1/2	1 1/4	31	1 1/4	F	13 1/4	3 1/2	1/4	2	13 1/2	3 1/2	1/4	2	117 3/8	34
Master WL-2½	4	1/4	1 1/4	1 1/16	V	13 1/2	2	12 1/2	1 1/4	31	1 1/4	F	13 1/4	3 1/2	1/4	2	13 1/4	3 1/2	1/4	2	156 3/8	34
Master D-2½	4	1/4	1 1/4	1 1/16	V	13 1/2	2	12 1/2	1 1/4	35	1 1/4	F	8 5/8	4 1/2	1/16	2	54 1/16	3	1/16	2	117 3/8	34
Master DL-2½	4	1/4	1 1/4	1 1/16	V	13 1/2	2	12 1/2	1 1/4	35	1 1/4	F	8 5/8	4 1/2	1/8	2	54 1/16	3	1/16	2	156 3/8	34
Master T-6 Tractor	4	1/4	1 1/4	1 1/16	V	13 1/2	2	12 1/2	1 1/4	33	1 1/2	F	74 1/2	2 1/2	1/8	1	74 1/2	2 1/4	1/4	1	72 1/8	34
Master A-3½	4	1/4	1 1/2	1 1/16	V	13 1/2	2	15	1 1/4	35	2	F	16	3 3/4	1/4	2	16	3 3/4	1/4	2	147 3/4	36 1/4
Master AL-3½	4	1/4	1 1/2	1 1/16	V	13 1/2	2	15	1 1/4	35	2	F	16	3 3/4	1/4	2	16	3 3/4	1/4	2	183 3/4	36 1/4
Master E-3½	4	1/4	1 1/2	1 1/16	V	13 1/2	2	15	1 1/4	35	2	F	11	6	1/4	2	25	4	1/4	4	147 3/4	36 1/4
Master EL-3½	4	1/4	1 1/2	1 1/16	V	13 1/2	2	15	1 1/4	35	2	F	11	6	1/4	2	25	4	1/4	4	183 3/4	36 1/4
Master B-5	4	1/4	1 1/2	1 1/16	V	13 1/2	2	15	1 1/2	37	2	F	18	4	1/4	2	18	4	1/4	2	162 7/8	39
Master BL-5	4	1/4	1 1/2	1 1/16	V	13 1/2	2	15	1 1/2	37	2	F	18	4	1/4	2	18	4	1/4	2	186 7/8	39
Master F-5	4	1/4	1 1/2	1 1/16	V	13 1/2	2	15	1 1/2	37	2	F	11	6	1/4	2	25	4	1/4	4	162 7/8	39
Master FL-5	4	1/4	1 1/2	1 1/16	V	13 1/2	2	15	1 1/2	37	2	F	11	6	1/4	2	25	4	1/4	4	186 7/8	39
Master DT-6 Tractor	4	1/4	1 1/4	2	H	13 1/2	2	12 1/2	1 1/4	35	1 1/4	F	8 5/8	4 1/2	1/16	2	54 1/16	3	1/16	2	72 1/8	43
Maxwell 1½	3	1/16	1	1	V	6 1/4	2 1/8	7 3/4	2 1/8	44 1/2	1 1/2	....	16	1 3/4	1/16	4	16	1 3/4	1/16	4	102	36
Menominee HT-1	3	1/4	1	1 1/2	....	....	....	....	....	....	....	....	12	3 1/4	1/4	8	....	....	....	....	104	32
Menominee H-1½	3	1/4	1 1/4	1 3/4	....	....	....	....	....	....	....	....	13 1/2	3 1/2	1/4	8	....	....	....	....	122	32
Menominee D-2	3	1/4	1 1/4	1 3/4	....	....	....	....	....	....	....	....	13 1/2	3 1/2	1/4	8	....	....	....	....	146	32
Menominee G-3½	3	1/4	1 1/2	2	....	....	....	....	....	....	....	....	16	3 1/2	1/4	8	....	....	....	....	149	36
Menominee J-5	3	1/4	1 1/2	2	....	....	....	....	....	....	....	....	18 1/2	4	1/4	8	....	....	....	....	149	38
Menominee HT-1	3	1/4	1	1 1/2	....	9 1/4	1 3/4	10 1/2	1 1/4	33 3/4	1 1/4	F	47 1/16	2 1/2	1/16	2	33 1/4	2 1/2	1/16	2	102 3/4	32
Menominee H-1	3	1/4	1	1 3/4	....	9 1/4	1 3/4	10 1/2	1 1/4	33 3/4	1 1/4	F	47 1/16	2 1/2	1/16	2	33 1/4	2 1/2	1/16	2	124	32
Menominee D-2	3	1/4	1 1/4	1 3/4	....	3	1 3/4	3	1 1/2	37 3/4	2	F	57 1/2	2 1/2	1/16	2	42 1/2	2 1/2	1/16	2	131 1/2	32
Menominee G-3½	3	1/4	1 1/4	1 3/4	....	3	1 3/4	3	1 1/2	37 3/4	2	F	57 1/2	2 1/2	1/16	2	42 1/2	2 1/2	1/16	2	149	36
Menominee J-5	3	1/4	1 1/2	2	....	3	1 3/4	3	1 3/4	40 3/4	2	F	69 1/16	3 1/2	1/16	2	52	2 1/2	1/16	2	149	38
Menominee G-3½	3	1/4	1 1/4	1 3/4	....	3	1 3/4	3	1 3/4	37 3/4	2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	149	36
Menominee J-3-5	3	1/4	1 1/2	2	....	3	1 3/4	3	1 3/4	40 3/4	2	F	18	4	1/4	4	18	4	1/4	4	149	38
Moline 10	3	1/16	....	1 1/4	H	10 1/2	2 1/4	4 1/2	2 1/4	....	2	F	21	2 1/2	1/16	2	20	2	1/16	2	108	32
Moreland 21B-1½	3	1/16	1 1/4	1 1/2	H	9	1 1/2	13	1 1/2	42	1 1/2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	132	34
Moreland 21C-2½	3	1/16	1 1/4	1 1/2	H	9	1 1/2	13	1 1/2	42	1 1/2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	132	34
Moreland 21H-4	3	1/16	1 1/4	1 1/2	H	9	1 1/2	13	1 1/2	42	1 1/2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	156	38
Napoleon 9-1	3	1/16	1	1 1/16	H	6 1/2	2 1/4	14	2 1/4	39	1	F	21	4	1/16	1	30	2 1/2	1/16	1	100 3/4	35 1/4
Napoleon 11-1½	3	1/16	1	1 1/16	H	6 1/2	2 1/4	14	2 1/4	39	1	F	21	4	1/16	1	30	2 1/2	1/16	1	100 3/4	35 1/4
Nash 2018-1-1½	4	1/4	1 1/4	1 1/4	....	3	1 1/2	7 3/4	1 1/4	36	1	F	49 1/8	2	1/16	2	20 7/16	2 1/2	1/16	2	104 1/2	30 1/2
Nash 3018-2-2½	4	1/4	1 1/4	1 1/4	....	3	1 1/2	....	....	44	1	F	50 5/8	3	1/16	2	20 15/16	2 1/2	1/16	2	118 1/4	31 1/2
Nash 4017-2-2½	3	1/4	1 1/4	1 1/4	....	7	1 1/2	....	....	44	2	F	49 1/4	2 1/2	1/4	4	25 1/16	2 1/2	1/4	4	117 1/8	38 1/2
Nelson & LeMoon G-2	4	1/4	1 1/4	1/16	....	....	....	....	....	....	....	....	12	3 1/4	1/4	2	12	3 1/4	1/4	2	Opt	.....
Nelson & LeMoon G-3	4	1/4	1 1/4	1/16	....	....	....	....	....	....	....	....	12	3 1/4	1/4	2	12	3 1/4	1/4	2	Opt	.....
Nelson & LeMoon G-4	4	1/4	1 1/4	1/16	....	....	....	....	....	....	....	....	16 1/2	3 3/4	1/4	2	16 1/2	3 3/4	1/4	2	Opt	.....
Nelson & LeMoon G-5	4	1/4	1 1/2	1/16	....	....	....	....	....	....	....	....	18	4	1/4	2	18	4	1/4	2	Opt	.....
Netco DK-2	3	1/16	1 1/4	1 1/16	V	12	1 1/2	16	1 1/4	40 1/16	1 1/2	F	13 3/16	3 1/2	1/4	4	13 3/16	3 1/2	1/4	4	108 1/2	34 1/2
Netco HL-2½-3	3	1/16	1 1/2	1 1/16	V	13	1 1/2	16	1 1/4	41 1/4	1 1/2	F	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	142	34 1/4
Niles E-2	3	1/16	1 3/4	1 3/4	V	8	1 1/4	11	1 1/4	30	3/4	F	12	3 1/4	1/4	2	12	3 1/4	1/4	2	147	56
Noble B-30-1½	4	1/16	1	1 1/16	....	16 1/2	1 1/4	7	1 7/8	34 1/4	1 7/8	....	43	2	1/4	2	43	2	1/4	2	136	34
Noble C-40-2	4	1/16	1 1/4	1 1/16	....	12	1 1/4	9	2	34 1/4	1 7/8	....	43	2	1/4	2	43	2	1/4	2	148	34
Noble D-50-2½	4	1/4	1 1/4	1 1/16	....	12	1 1/4	9	2	34 1/4	1 7/8	....	51	2 1/4	1/4	2	51	2 1/4	1/4	2	172	34
Noble E-70-3½	4	1/4	1 1/4	1 1/16	....	16	1 1/4	14 1/2	2	34 1/4	1 7/8	....	57	2 1/2	1/4	2	57	2 1/2	1/4	2	172	36
Northway B-2	3	1/16	1 1/4	1 3/4	V	5 1/4	2 1/4	13 7/8	1 1/4	46 33/44	5/8	V	50 1/2	2 1/4	1/4	2	50 1/2	2 1/4	1/4	2	133	33
Northway B-3	3	1/16	1 1/4	1 3/4	V	5 1/4	2 1/4	13 7/8	1 1/4	46 33/44	5/8	V	54	2 1/2	1/4	2	54	2 1/2	1/4	2	173	34 1/8
Norwalk 25E-1	3	1/16	1	1 1/16	V	9	2 1/4	19	2 1/4	29	3/4	V	16 1/2	2 1/4	1/16	2	16 1/2	1 1/2	1/16	2	100	36
Norwalk 35E-1½	3	1/16	1	1 1/16	V	9	2 1/4	19	2 1/4	29	3/4	F	16 1/2	2 1/4	1/16	2	16 1/2	1 1/2	1/16	2	124	34
Norwalk 35E Spec.-1½	3	1/16	1	1 1/16	V	11	2	18	1 1/2	36	2	F	19	2	1/4	2	19	2	1/4	2	124	34
Ogden A-1	3	1/16	1	1	V	12	2	6	2	44	3/4	F	11	2 1/2	1/4	4	11	2 1/2	1/4	4	108	33 1/4
Ogden D-1½	3	1/16	1	1	H	13	2	12	2	44	3/4	V	10 33/44	3	1/4	4	10 33/44	3	1/4	4	120	33 1/4
Ogden E-2½	3	1/16	1 1/4	2	H	10	1 5/16	14	1 5/16	30	1 1/4	F	52	2 1/4	1/4	1	52	2 1/4	1/4	1	144	33 1/4
Ogden F-3½	3	1/4	1 1/4	2	H	11	1 1/2	16	1 1/2	36	1 1/2	F	15 5/8	3 3/4	1/4	2	10 3/8	3 3/4	1/4	4	168	33 1/4
Ogden G-5	3	1/4	1 1/2	3	....	9	2	18	2	40	2	F	11	6	1/4	2	25	4	1/4	4	168	34
O. K.-1½	4	1/4	1 1/4	1 11/16	V	12	2	13 1/2	1 1/4	36	2	F	53	2 1/2	1/16	2	38	2 1/2	1/16	2	117	34
O. K.-2½	4	1/4	1 1/4	1 11/16	V	12	2	13 1/2	1 1/4	36	2	F	62	2 1/2	1/16	2	48	2 1/2	1/16	2	121	35
O. K.-3½	4	1/4	1 1/4	1 11/16	V	12	2	13 1/2	1 1/4	38	2	F	62	2 1/2	1/16	2	48	2 1/2	1/16	2	133	34
Old Reliable A-1½	3	1/4	1 1/4	1 1/4	....	....	....	....	....	....	....	....	48	2 1/2	1/4	1	48	2 1/2	1/4	1	105	32
Old Reliable B-2½	3	1/4	1 1/4	1 1/4	....	....	....	....	....	....	....	....	54	2	1/4	1	54	2	1/4	1	144	32
Old Reliable C-3½	3	1/4	1 1/4	1 1/4	....	....	....	....	....	....	....	....	60	2 1/2	1/4	1	60	2 1/2	1/4	1	150	32
Old Reliable D-5	3	1/4	1 1/2	1 1/2	....	....	....	....	....	....	....	....	72	3	1/4	1	72	3	1/4	1	156	34
Old Reliable K. L. M.-7	3	1/4	1 1/2	1 1/2	....	....	....	....	....	....	....	....	54	3 1/2	1/4	1	60	4	1/4	1	158	36
Oldsmobile T-1	3	1/16	1 1/4	1 3/8	V	5	1 1/4	11	1 1/4	32 3/8	3/4	V	42 1/4	2	1/16	1	41 1/16	2	1/16	1	92 5/8	32 1/2
Olympic 2½	4	1/4	1 1/4	1 1/2	V	13	2	12	1 1/4	34	2	F	13 1/2	3 1/2	1/4	2	13 1/2	3 1/2	1/4	2	Opt	32 1/2
Oneida B9-1½	3	1/16	1 1/4	1 1/2	H	9 1/2	1 1/4	9 1/2	1 1/4	38 1/2	2	F	48	2 1/2	1/4	2	34	2 1/2	1/4	2	114	34
Oneida C9-2½	3	1/16	1 1/4	1 1/2	H	9 1/4	1 1/4	9 1/2	1 1/4	38 1/2	2	F	58	2 1/2	1/16	2	43	2 1/2	1/16	2	138	34
Oneida D9-3½	3	1/4	1 1/4	1 1/2	H	7	1 1/2	9 1/2	1 1/2	40	2	F	16	3 3/4	1/16	4	16	3 3/4	1/16	4	157	36
Oneida E9-5	3	1/4	1 1/4	1 1/2	H	7 1/2	1 3/4	9 1/2	1 1/2	40	2	F	18	4	1/16	4	18	4	1/16	4	177	38
Packard EC	3	1/4	1 5/8	1 3/4	V	6 1/4	1 1/2	10 3/8	1 1/2	41 1/16	3/4	V	7 33/44	4 3/4	1/4	2	14	2	1/4	2	132	31 1/4
Packard ED	3	1/4	1 5/8	1 3/4	V	6 1/4	1 1/2	10 3/8	1 1/2	43 1/16	3/4	V	9 1/16	4 3/4	1/4	2	17	3	1/16	4	144	39
Packard EF	3	1/4	1 5/8	1 3/4	V	6 1/4	1 1/2	10 3/8	1 1/2	43 1/16	3/4	V	9 1/16	6 1/2	1/4	2	18 3/4	3 1/2	1/16	4	144	39
Packard EX	3	1/4	1 5/8	1 3/4	V	6 1/4	1 1/2	10 3/8	1 1/2	43 1/16	3/4	V	9 1/16	6 1/2	1/4	2	14	2	1/16	4	132	31 1/4
Paige 54-20-2½	3	1/4	....	1 1/4	....	10 1/2	1 1/2	10 1/2	1 1/2	37 5/8	1 1/4	V	49 5/8	2 1/4	1/4	2	49 5/8	2 1/4	1/4	2	126	33
Paige 51-18-3½	3	1/4	....	1 1/4	....	13	1 1/2	13	1 1/2	37 5/8	2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	144	35
Paige 52-19-1½	3	1/16	....	1 1/4	....	8	1 1/4	12	1 1/4	36	2	F	11 1/2	3 1/4	1/4	4	11 1/2	3 1/4	1/4	4	126	33
Parker C22-1	3	1/4	1	1 1/4	V	16	1 1/4	12 1/2	1 1/4	39	1 1/2	F	10 1/2	3	1/4	4	10 1/2	3	1/4	4	95	33
Parker G1-2½	3	1/4	1 1/4	1 1/2	V	19	1 3/4	16	1 1/2	38	2	F	10 3/4	5	1/4	2	19	2 1/2	1/4	4	127	33
Parker J20-3½	3	1/4	1 1/4	1 1/2	V	19	1 3/4	16 1/2	1 1/2	38	2	F	10 3/4	5	1/4	2	19	3 1/2	1/4	4	139 1/2	33
Parker M20-5	3	1/4	1 1/2	1 3/4	V	14	1 3/4	18	1 3/4	40 1/2	2	F	10 3/4	5	1/4	2	24 1/2	4	1/4	4	145	37
Patriot Revere-1	3	1/16	1 1/16	3/8	H	8	2	9	2	39	1 1/4	F	40 1/2	1 3/4	1/16	1	40 1/2	1 3/4	1/16	1	93	66

Replacement Table—Continued

Name, Model and Tonnage	ENGINE													BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt				Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type		Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Patriot Lincoln Special–2	3	3/16	1 1/16	3/4	V	6	1 1/4	8	1 1/2	37	1 3/4	F		40 1/2	1 3/4	3/16	1	40 1/2	1 3/4	3/16	1	113	67 1/2
Patriot Washington Special–3	3	1/4	1 1/16	3/8	V	11	1 1/2	10	2	39	2	F		58	2 1/2	1/4	1	43	2 1/2	1/4	1	150	67 1/2
Pierce Arrow–2–X–5	3	1/4	1 1/16	1 5/8	V	16 3/8	2 3/8	14 1/4	2 1/8	43 1/2	1 1/2	F		22 1/4	2 1/4	1/4	4	22 1/4	2 1/4	1/4	4	125 1/16	34 1/8
Pierce Arrow–3 1/2–W–2	3	1/4	1 1/16	1 7/8	V	11	2 3/8	15 1/2	2 1/8	43 1/2	1 1/2	F		9 11/16	6	1/4	2	18	4 3/4	1/4	4	133 1/4	38 1/8
Pierce Arrow–5–R–10	3	1/4	1 1/16	1 7/8	V	11	2 3/8	15 1/2	2 1/8	43 1/2	1 1/2	F		9 11/16	6	1/4	2	20 7/8	4 3/4	1/4	4	139 1/4	38 1/8
Pioneer 59AA–1	3	1/4	1 1/4	1 1/2	V	13	2	12	2	35	1	F		14	1 3/4	1/16	4	14	1 3/4	1/16	4	102	30
Pittsburgher 2 1/2	3	1/16	1 1/4	1 1/4	V	6	1 1/2	12	1 1/4	37	1 1/4	F		52	2 1/4	1/4	2	52	2 1/4	1/4	2	136	33
Rainier R–8–2	3	1/16	1 1/16	3/4	V	5	1 1/2	13	1 1/2	31 1/2	1 1/4	F		44 1/2	2	1/4	1	44 1/2	2	1/4	1	....	34
Rainier R–19–1	3	1/16	1 1/16	3/4	V	9 3/4	1 1/2	14 3/4	1 1/2	41	1 1/2	F		19	2	1/4	2	19	2	1/4	2	113	34
Rainier R6–1 1/2	3	1/16	1 1/16	3/4	V	8 1/2	1 1/2	14	1 1/2	41	1 1/2	F		19	2	1/16	2	19	2	1/16	2	100	34
Rainier R–11–3/4	3	1/4	1 1/16	1 1/2	H	11 3/4	1 1/16	10	1 1/4	33 3/4	1	F		11 1/4	2	1/4	2	11 1/4	2	1/4	2	90	34
Ranger TK–22–1 1/2	4	1/4	1 1/4	3/8	V	9	1 1/2	14 1/2	1 1/2	42	1 1/2	F		11 1/2	3 1/4	M	2	11 1/2	3 1/4	1/16	2	106 1/2	33
Reliance 10A–1 1/2	4	1/4	1 1/4	3/8	V	10 1/2	2	13 1/2	1 3/8	35	2	F		17	2	1/16	4	17	2	1/16	4	122	32
Reliance 20B–2 1/2	4	1/4	1 1/4	3/8	V	10 1/2	2	13 1/2	1 3/8	35	2	F		17	2	1/16	4	17	2	1/16	4	127	32
Reo F—1500–2500 lbs	3	1/16	1	....	V	5 1/2	1	5 1/2	1	39 1/16	7/8	F		43	2 1/4	1/16	1	39 5/8	2	1/16	1	82	30
Republic 10-1-10E-1	3	1/16	1	....	V	12 1/4	2	6	2	40 1/16	1 1/4	F		21 1/4	2 1/2	1/16	4	19 3/4	2 1/4	1/16	2	....	34
Republic 11X–1 1/2	3	1/16	1	....	V	12 1/4	2	6	2	40 1/16	1 1/4	F		25 1/4	2 1/2	1/16	4	24 1/4	2 1/4	1/16	2	118	34
Republic 19–2 1/2	3	1/16	1 1/4	....	V	8	1 1/2	11 3/4	1 1/4	32 1/16	1 1/4	F		25 1/4	2 1/2	1/16	4	24 1/4	2 1/4	1/16	2	121	34
Republic 20–3 1/2	3	1/16	1 1/4	....	V	7 1/4	1 3/4	5 1/2	1 1/4	36 1/4	1 1/2	F		55 3/4	3 1/2	1/16	2	30 11/16	4 1/2	1/16	1	146	37
Republic Rapid Transit–3/4	3	1/16	1	....	V	12	2 1/4	18 1/2	2 1/4	31 11/16	1	F		19	2	1/16	4	18	2	1/16	4	95	31
Rowe CW–1 1/2	3	1/16	1 1/4	....	....	10 1/2	1 3/4	10 1/2	1 1/2	32 1/2	1 1/8	F		19	2	1/16	8	19	2	1/16	8	113	33
Rowe CDW–2	3	1/4	1 1/4	....	....	10 1/2	1 3/4	10 1/2	1 1/2	32 1/2	1 1/8	F		45	2	1/4	4	45	2	1/4	4	123	33
Rowe GSW–3	3	1/4	1 1/4	....	....	20	1 3/4	15 1/2	1 1/2	36 1/4	2	F		51 1/2	2 1/2	1/4	4	51 1/2	2 1/2	1/4	4	140	33
Rowe HW–4	3	1/4	1 1/4	....	....	20	1 3/4	15 1/2	1 1/2	36 1/2	2	F		56 1/2	2 1/2	1/4	4	56 1/2	2 1/2	1/4	4	146	36
Rowe FW–5	3	1/4	1 1/4	....	....	20	1 3/4	15 1/2	1 1/2	36 1/4	2	F		68	3	1/16	4	68	3	1/16	4	153	38 1/2
Rowe GPW–3	3	1/4	1 1/4	....	....	10	1 1/4	6	1 3/4	....	....	....		....	....	....	....	....	....	....	....	152	33
Rumely A–1 1/2	4	1/16	1 1/16	1 1/16	V	10 1/2	1 3/4	10 1/2	1 1/4	37	2	F		18	2	1/16	4	18	2	1/16	4	122	34
Samson 15–3/4	3	1/16	1 1/16	1 1/16	V	6 1/2	1 1/4	7 3/4	1 1/4	35 22/32	22/32	V		37	2	1/16	1	35 3/4	1 3/4	1/16	1	108 1/4	39 1/2
Samson 25–1 1/4	3	1/16	1 1/16	1 3/8	V	6 1/2	1 1/4	7 3/4	1 1/4	37 11/32	11/32	V		43 3/8	2	1/16	1	37 1/16	1 3/4	1/16	1	108 1/4	39 1/2
Sanford W15–1	3	1/16	1	1	H	....	....	....	....	....	....	....		22 1/4	2 1/4	1/4	4	22 1/4	2 1/4	1/4	4	....	....
Sanford 25–2 1/2	3	1/16	1 1/4	1 1/4	V	....	....	....	....	....	....	....		22 1/4	2 1/4	1/4	4	22 1/4	2 1/4	1/4	4	....	....
Sanford 35–3 1/2	3	1/16	1 1/4	1 1/4	V	....	....	....	....	....	....	....		55 3/4	2 1/2	1/4	2	55 3/4	2 1/2	1/4	2	....	....
Sanford 50–5	3	1/16	1 1/4	1 1/4	V	....	....	....	....	....	....	....		65	2	1/4	2	65	2	1/4	2	....	....
Schacht F–2	4	1/4	1 1/4	2	H	11	2	14	1 1/4	37 1/2	2	F		8 1/4	3	1/4	4	13 1/2	3	1/4	4	140	35 3/4
Schacht F–3	4	1/4	1 1/4	2	H	11	2	14	1 1/4	37 1/2	2	F		8 1/4	3	1/4	4	13 1/2	3	1/4	4	140	35 3/4
Schacht E–4	4	1/4	1 1/4	2	H	10 1/2	2	13 1/2	1 1/4	39 1/4	7/8	V		8 1/4	3	1/4	4	15	4	3/8	4	152	35 3/4
Schacht E–5	4	1/4	1 1/4	2	H	10 1/2	2	13 1/2	1 1/4	39 1/4	7/8	V		8 1/4	3	1/4	4	15	4	3/8	4	152	35 3/4
Schacht E–7	4	1/4	1 1/4	2	H	10 1/2	2	13 1/2	1 1/4	39 1/4	7/8	V		8 1/4	3 1/4	1/4	4	15	4	3/8	4	152	35 3/4
Schwartz A–1 1/4	3	1/16	1	1/16	H	9 1/2	2 1/4	13	2 1/4	29 1/2	7/8	F		15 5/8	1 3/4	1/16	4	15 5/8	1 3/4	1/16	4	....	....
Schwartz K–1 1/2	4	1/16	1	1/16	H	10	1 3/4	18	1 1/4	33 1/8	2	F		20 1/4	2 1/4	1/4	4	20 1/4	2 1/4	1/4	4	120	34
Schwartz LS–L–LL–2 1/2	4	1/4	1 1/4	1/16	M	10 1/2	2	15	1 1/4	33 1/8	2	F		51 1/2	2 1/4	1/4	2	51 1/2	2 1/4	1/4	2	....	34
Schwartz MS–M–ML–5	4	1/4	1 1/4	1/16	H	12 1/2	2	17	1 1/4	38 3/8	2	F		69 1/2	3	1/4	2	69 1/2	3	1/4	2	....	36
Selden Unit 30	3	1/16	1	1 1/16	V	12	2	....	....	....	....	....		11 1/16	3 1/4	1/4	4	11 1/16	3 1/4	1/4	4	114	34
Selden Unit 50	3	1/16	1	1 1/16	V	3 3/4	1 1/4	12	1 1/4	31	1 1/2	F		13	3 1/2	1/4	4	13	3 1/2	1/4	4	134	34
Selden Unit 31	3	1/16	1	1 1/16	V	3 3/4	1 1/4	12	1 1/4	31	1 1/2	F		13	3 1/2	1/4	4	13	3 1/2	1/4	4	176	34
Selden Unit 70	3	1/16	1 1/4	1 1/16	V	9	1 3/4	5 1/2	1 3/4	34 1/4	2	F		15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	153	37 1/2
Selden Unit 51	3	1/16	1 1/4	1 1/16	V	7 1/2	1 1/2	15 1/2	1 1/4	31 1/2	2	F		13	3 1/2	1/4	4	13	3 1/2	1/4	4	134	34
Selden Unit 90	3	1/4	1 1/2	1 1/16	V	7	2	20 1/2	2	40 3/8	2	F		17 11/16	4	1/4	4	17 11/16	4	1/4	4	153	37 1/2
Service 12–3/4	3	1/16	1 1/16	1 1/16	V	13 1/2	2 1/2	14 1/2	2 1/2	35 1/2	1 1/4	F		10 1/16	2 1/2	1/4	4	10 1/16	2 1/2	1/4	4	101 1/2	37 1/16
Service 15–1 1/4	3	1/16	1 1/16	1 1/16	V	10	1 3/4	2	1 1/4	35	2	F		19 3/8	1 3/4	1/16	4	19 3/8	1 3/4	1/4	4	101 1/2	37 1/16
Service 220–1 1/2	3	1/16	1 1/16	1 1/16	H	10	2	6	1 3/4	37 3/4	....	F		12	3 1/4	1/4	2	12	3 1/4	1/4	2	109 1/2	34
Service 31–2	4	1/4	1 1/16	1 1/16	V	10	2	8	1 1/4	33	1 1/4	F		12	3 1/4	1/4	2	12	3 1/4	1/4	2	121	34
Service 36–2	4	1/4	1 1/16	1 1/16	V	10	2	8	1 1/4	33	1 1/4	F		12	3 1/4	1/4	2	12	3 1/4	1/4	2	121 1/16	34
Service 51–3	4	1/4	1 1/16	1 1/16	V	10	2	8	1 1/4	33	1 1/4	F		13 1/2	3 1/2	1/4	2	13 1/2	3 1/2	1/4	2	131 1/8	34
Service 71–3 1/2	4	1/4	1 1/16	1 1/16	V	10	2	10	1 1/4	38 1/4	1 1/2	F		16	3 3/4	1/4	2	16	3 3/4	1/4	2	150 1/4	38
Service 76–4	4	1/4	1 1/16	1 1/16	V	10	2	10	1 1/4	38 1/4	1 1/2	F		16	3 3/4	1/4	2	16	3 3/4	1/4	2	145 3/4	38
Service 101–6	4	1/4	1 1/16	1 1/16	V	10	2	10	1 1/4	38 1/4	1 1/2	F		18 1/2	4	1/4	2	18 1/2	4	1/4	2	145 3/4	38
Signal NF–1	3	1/16	1 1/16	1 1/16	V	7 1/4	1 1/2	12	1 1/2	39 3/4	1 1/4	....		11	3	1/4	4	11	3	1/4	4	120	....
Signal H 1 1/2	3	1/16	1 1/16	1 1/16	V	8	1 1/2	9	1 1/4	30 1/2	1 1/4	....		12	3 1/4	1/4	4	12	3 1/4	1/4	4	120	34
Signal J–2 1/2	3	1/16	1 1/16	1 1/16	V	10	1 1/2	12	1 1/4	30 1/2	1 1/4	....		13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	126	34
Signal M 3 1/2	3	1/16	1 1/16	1 1/16	V	5 1/2	1 1/2	12	1 1/4	34 1/4	1 1/4	....		16	3 3/4	1/4	4	16	3 3/4	1/4	4	168	38
Signal R–5	3	1/4	1 1/16	1 1/8	V	8	2	16	2	41	2	....		18	4	1/4	4	18	4	1/4	4	172	38
Standard I-K–1–1 1/2	3	1/16	1	1 1/16	V	10 1/2	2 1/16	14 3/4	1 1/8	39 1/4	1 1/4	F		10 7/8	3	1/4	4	10 7/8	3	1/4	4	120	32
Standard 76–2 1/2–3	3	1/16	1 1/4	1 1/16	V	....	1 1/8	12	1 1/8	31 1/4	1 1/4	F		13 1/16	3 1/2	1/4	4	13 1/16	3 1/4	1/4	4	122	32
Standard 66–3 1/2–4	3	1/16	1 1/4	1 1/16	V	12	2 1/16	18	1 5/8	36 1/2	1 1/2	F		15 5/8	3 3/4	1/4	4	15 5/8	3 1/4	1/4	4	144	38
Standard 5K–5–7	3	1/4	1 1/2	1 1/16	V	8	2 1/16	3 1/2	2 3/8	42 1/4	2	F		17 11/16	4	1/4	4	17	4	1/4	4	144	38
Sterling 1 1/2	3	1/4	1 1/4	1/4	V	11	1 1/2	19	1 1/2	38	1 1/2	F		11 3/4	3 1/4	1/4	8	11 3/4	3 1/4	1/4	8	120	33 1/2
Sterling 2	3	1/4	1 1/4	1/4	V	11	1 1/2	19	1 1/2	38	1 1/2	F		13 3/8	3 1/2	1/4	8	13 3/8	3 1/2	1/4	8	120	33 1/2
Sterling 2 1/2	3	1/4	1 1/4	1/4	V	11	1 1/2	19	1 1/2	38	1 1/2	F		13 3/8	3 1/2	1/4	8	13 3/8	3 1/2	1/4	8	138	34
Sterling 3 1/2	3	1/4	1 1/2	1/4	V	14 5/8	1 1/2	22	1 1/2	40 1/2	1 1/2	F		15 3/4	3 3/4	1/4	8	15 3/4	3 3/4	1/4	8	144	38
Sterling 5-Worm	3	1/4	1 1/2	1/4	V	11	1 1/2	19	1 1/2	40 1/2	1 1/2	F		17 11/16	4	1/4	8	17 11/16	4	1/4	8	158	38
Sterling 5-Chain	3	1/4	1 1/2	1/4	V	11	1 1/2	19	1 1/2	40 1/2	1 1/2	F		56 1/2	3 1/2	1/4	2	34 11/16	4	1/4	1	158	38
Sterling 7 1/2	3	1/4	1 1/2	1/4	V	11	1 1/2	19	1 1/2	40 1/2	1 1/2	F		56 1/2	3 1/2	1/4	2	34 11/16	4	1/4	1	158	38
Stewart M7–2	3	1/16	....	1 1/16	....	....	....	....	....	....	....	....		50 5/8	2	1/16	2	8	5	1/16	2	132 3/4	32
Stewart M15–1	3	1/16	....	1	....	....	....	....	....	....	....	....		41 3/8	2	1/16	2	22 3/4	2	1/16	1	99 1/2	32
Stewart M9–1 1/2	3	1/16	....	1	....	....	....	....	....	....	....	....		48 1/2	2	1/16	2	8	5	1/16	2	119 1/4	32
Stewart M10–3 1/2	3	1/16	....	1 3/8	....	....	....	....	....	....	....	....		60	3	1/16	2	8	5	1/16	2	139 3/4	32
Stewart M7X	3	1/4	....	1 1/16	....	....	....	....	....	....	....	....		50 5/8	2	1/16	2	8	5	1/16	2	132 3/4	32
Stewart M10X	3	1/4	....	1 3/8	....	....	....	....	....	....	....	....		60	3	1/16	2	8	5	1/16	2	138	32
Stoughton A–1	4	1/4	1	1 3/8	V	18	1 1/4	15	1 1/4	38 1/2	1 3/4	F		16	1 3/4	1/16	4	16	1 3/4	1/16	4	88	34
Stoughton B–1 1/2	4	1/4	1	1 3/8	V	18	1 1/4	15	1 1/4	39 1/4	1 1/2	F		19	2	1/16	4	19	2	1/16	4	116	34
Stoughton D–2	4	1/16	1 1/4	1 3/8	V	8 1/2	1 1/2	15	1 1/4	42	2	F		45	2	1/16	2	45	2	1/16	2	116	34
Stoughton F–3	4	1/16	1 1/4	1 3/8	V	9 1/2	1 3/4	15	1 1/4	42	2	F		52	2 1/4	1/16	2	52	2 1/4	1/16	2	127	36
Super Truck 50	3	1/4	1 1/4	1 1/16	V	19	1 3/4	19	1 1/2	37 1/2	1 7/8	F		51 1/2	2 1/4	1/4	2	51 1/2	2 1/4	1/4	2	135	34
Super Truck 70	3	1/4	1 1/4	1 1/16	V	19 1/2	1 3/4	19	1 1/2	37 1/2	1 7/8	F		55 1/2	2 1/2	1/4	2	55 1/2	2 1/2	1/4	2	144	34
Super Truck 100	3	1/4	1 1/2	1 1/16	V	6	1 3/4	19	1 3/4	42	1 7/8	F		68	3	1/4	2	51 1/2	3	1/4	2	144	34
Superior D–1	3	1/4	1 1/16	1 1/16	....	11	2	10	....	39	1	F		45	2 1/2	1/16	2	44	2 1/4	1/16	2	97 3/4	34
Superior E–2	3	M	1 1/16	1 1/16	....	8 1/2	1 1/2	15	1 1/4	29	1	F		54	2 1/2	1/16	4	53 1/2	2 1/2	1/16	2	114	34
Thomart Speed	3	1/4	1 1/4	1 1/16	V	9	1 1/4	7 1/4	1 1/4	36 1/2	2	F		19 3/16	1 3/4	1/16	4	19 3/8	1 3/4	1/16	4	102	34
Tiffin GW–1 1/2	3	1/4	1 1/4	1 1/4	V	....	....	....	....	....	....	....		46	2	1/4	1	46	2	1/4	1	114	35
Tiffin MW–2 1/2	3	1/4	1 1/4	1 1/4	V	....	....	....	....	....	....	....		52	2 1/4	1/4	1	52	2 1/4	1/4	1	138 1/2	32 3/4
Tiffin F–35–3 1/2	3	1/4	1 1/4	1 1/4	V	....	....	....	....	....	....	....		58	2 1/2	1/4	1	58	2 1/2	1/4	1	151	35 1/2
Tiffin TW–5	4	1/4	1 1/2	1 1/2	V	....	....	....	....	....	....	....		68	3	1/4	1	68	3	1/4	1	156	38 1/2
Tiffin UW–6	4	1/4	1 1/2	1 1/2	V	....	....	....	....	....	....	....		68	3	1/4	1	68	3	1/4	1	156	38 1/2
Titan 3 1/2	4	1/4	1 1/2	1 3/4	....	....	....	....	....	....	....	....		60	2 1/4	1/16	2	14	4 1/2	1/16	2	144	34
Titan 5–6	4	1/4	1 1/2	1 3/4	....	....	....	....	....	....	....	....		90	2 1/4	1/16	2	14	4 1/2	1/16	2	144	34
Titan 2 1/2	4	1/4	1 1/4	1 1/4	....	....	....	....	....	....	....	....		54	2 1/2	1/16	2	26	4	1/16	1	144	32
Tower J–1 1/2	3	1/16	1 1/4	1 1/4	....	....	....	....	....	....	....	....		11 3/4	3 1/4	1/4	4	11 3/4	3 1/4	1/4	4	135 1/4	32 1/2
Tower H–2 1/2	3	1/16	1 1/4	1 1/4	....	....	....	....	....	....	....	....		13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	138 3/4	32 1/2

Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Tower G–3½	3	1/4	1½	1½									15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	3/4	4	152 11/16	37
Traffic C–4000	1	1/16	1	1/16	H	10½	2	10	2	41¼	1¼	F	43½	2½	1/16	2	38	1¾	1/16	2	120¾	42
Traffic 6000	3	1/16	1	1/16	H	10½	2	10½	2	41¼	1¼	F									120¾	34
Traffic Speedboy	3	1/16	1	1/16	H	10½	2	10½	2	41¼	1¼	F	43½	2½	1/16	2	38	1¾	1/16	2	86	34
Transport 15–1	3	1/16	1	1	H	10¾	2	13	2	40 3/8	1¼	F	48	2½	1/16	2	46 5/8	2	1/16	2	98 1/8	34
Transport 25–1½	3	1/16	1	1	V	12	2	12	2	36½	1¼	F	48½	2	1/16	2	46½	1½	1/16	2	100 7/8	34
Transport 35–2	3	1/16	1	1	V	10¾	2	13	2	40 3/8	1¼	F	11	3	1/16	2	46½	2½	1/16	2	116 7/8	34
Transport 60–3½	4	1/4	1¼	1¼	V	9¾	2	10	1¼	32¾	2	F	10¼	3	1/16	2	48½	2½	1/16	2	152 1/8	34
Transport 75–5	4	1/4	1¼	1¼	V	12	2	16	1¼	35 7/8	2	F	11 7/8	3	1/16	4	58	2½	1/16	2	150 1/8	36½
Traylor B–1½	4	1/4	1	....	V	....	....	....	....	38	1	F	50	2	1/4	2	50	2	1/4	2	117	34
Traylor C–2–2½	4	1/4	1¼	....	V	....	....	....	....	36	2	F	50	2	1/4	2	50	2	1/4	2	122	34
Traylor D–3–3½	4	1/4	1¼	....	V	....	....	....	....	36	2	F	56½	2¼	1/4	2	56½	2¼	1/4	2	142	34
Traylor F–5–6	4	1/4	1¼	....	V	....	....	....	....	37	2	F	59	2½	....	2	59	2½	....	2	165	35
Triangle AA–¾	3	1/16	1	1	H	17	2	17	2	34	1	F	22	2½	1/16	1	41	2	1/16	2	94	35
Triangle A–1½	3	1/4	1	1	V	14	1¼	14½	1¼	39¼	1½	F	7	4	1/16	2	49	2	1/16	2	126	34
Triangle B–2½	3	1/4	1¼	1¼	V	18	1½	18	1¼	39¼	1½	F	7	4	1/16	2	52	3	1/16	2	132	34
Triangle C–2	3	1/4	1	1	V	14	1¼	14½	1¼	39¼	1½	F	7	4	1/16	2	52	3	1/16	2	129	34
Triumph HB–2½	4	1/4	....	....	V	9	1¾	17	1¼	32½	2	F	46	2½	1/16	2	32	2½	1/16	2	120	34½
Triumph HC–2	4	1/4	....	....	V	9	1¾	17	1¼	32½	2	F	46	2½	1/16	2	32	2½	1/16	2	120	34½
Ultimate A–2	4	1/4	1¼	1 5/8	V	11	2	8	1¼	34	2	F	20	2¼	1/4	2	45	2	1/4	2	126	32¾
Ultimate AJ2	4	1/4	1¼	1 5/8	V	11	2	8	1¼	34	2	F	20	2¼	1/4	2	45	2	1/4	2	126	32¾
Ultimate AJL–2	4	1/4	1¼	1 5/8	V	11	2	8	1¼	34	2	F	20	2¼	1/4	2	45	2	1/4	2	150	32¾
Ultimate B–3	4	1/4	1¼	1 5/8	V	11	2	8	1¼	34	2	F	51	2¼	1/4	2	51	2¼	1/4	2	144	32¾
Ultimate BL3	4	1/4	1¼	1 5/8	V	11	2	8	1¼	34	2	F	51	2¼	1/4	2	51	2¼	1/4	2	192	32¾
Ultimate D–5	4	1/4	1¼	1 5/8	V	11	2	8	1¼	34	2	F	51	2¼	1/4	2	51	2¼	1/4	2	180	37½
Union F–2½	3	1/4	1¼	1¼	V	20	1¾	19½	1½	37 3/4	2	F	55	3	1/16	1	50	2	1/16	1	133½	32
Union FW–2½	3	1/4	1¼	1¼	V	20	1¾	19½	1½	37 3/4	2	F	26	4½	1/4	1	52	3	1/4	1	133½	32
Union H–4	3	1/4	1¼	1¼	V	20	1¾	19½	1½	37 3/4	2	F	56¾	3½	1/16	1	32	4½	1/16	1	157½	34
Union HW–4	3	1/4	1¼	1¼	V	20	1¾	19½	1½	37 3/4	2	F	26	4½	1/4	1	24	4	1/4	2	157½	34
Union JW–6	3	1/4	1½	2	V	20	1¾	19½	1½	41½	2	F	34	4	1/4	1	28	5	1/4	2	190	36
United 1½	4	1/4	1	1 1/16	H	15	2½	16	1½	37½	2	F	48	2	1/16	1	48	1½	1/16	1	120	33
United 2½	4	1/4	1¼	1 11/16	H	7	2½	12	1½	37½	2	F	49	3	1/16	1	49	2½	1/16	1	Opt	33
United 3½	4	1/4	1¼	1 11/16	H	7	2½	7	1½	37½	2	F	62	3	1/16	1	58	2½	1/16	1	Opt	34
United 5	4	1/4	1½	1 11/16	H	14½	2½	12	1½	37½	2	F	82½	2¼	1/16	1	88½	2½	1/16	1	Opt	38
U.S.N.–1½	3	M	1	1/8	H	11½	2	9	1¼	37	1¼	F	50½	2½	1/16	2	46½	1½	1/16	2	120	34
U.S.N.W.–1½	3	1/4	1	1/8	H	11½	2	9	1¼	37	1¼	F	19½	2	1/16	4	19½	2	1/16	4	120	34
U.S.R.–2½–3	3	1/4	1¼	1/8	V	10	1¼	10	1¼	35	1¼	F	21	2¼	1/4	2	21	2¼	1/4	4	144	34
U.S.S.–3½–4	3	1/4	1¼	1/4	V	9	1½	8	1½	37	1¼	F	50	2½	1/4	2	50	2½	1/4	2	156	36
U.S.T.–5–6	4	1/4	1½	1/4	V	15	2	13	1½	38¾	2	F	62	3	1/4	4	33	4	1/4	1	168	36
U.S.U.–1¼	4	1/16	1	1/8	V	11½	1¾	11½	1¼	33	1¼	F	50½	2½	1/16	2	46½	1½	1/16	2	108	32
Velie 46–1½	3	M	1	1/16	V	9½	2¼	12¾	1½	40	3/4	V	54 3/8	2½	1/16	2	52 1/8	2¼	1/16	2	120	31
Vim 29½	3	1/16	7/8	....	....	....	....	....	....	30¾	1	F	14 7/8	1½	1/16	4	14 7/8	1½	1/16	4	64	30
Vim 30½	3	1/16	7/8	....	....	....	....	....	....	30¾	1	F	14 7/8	1½	1/16	4	14 7/8	1½	1/16	4	83½	30
Vim 31–1	4	1/16	1	....	....	....	....	....	....	40	1	F	18	2	1/16	4	18	2	1/16	4	92	32
Vim 22–2	4	1/16	1	....	....	....	....	....	....	40	1	F	42 5/8	2	1/4	2	42 5/8	2	1/4	2	120 5/8	34
Vim 23–3	5	1/16	1¼	....	....	....	....	....	....	40	1	F	48 7/8	2¼	1/4	2	48 7/8	2¼	1/4	2	160 1/16	34
Walker M½	....	....	....	....	....	....	....	....	....	....	....	....	43	2¼	1/16	2	14	1¾	1/16	4	90	32
Walker P3½	....	....	....	....	....	....	....	....	....	....	....	....	53¼	3	1/16	2	19¼	2½	1/16	4	140	35
Walker N5	....	....	....	....	....	....	....	....	....	....	....	....	53¼	3	1/16	2	19¼	2½	1/16	4	162	35
Walker Model 22	....	....	....	....	....	....	....	....	....	....	....	....	45½	2½	1/16	2	16	2	1/16	4	99	32
Walker Model 42	....	....	....	....	....	....	....	....	....	....	....	....	53¼	3	1/16	2	19¼	2½	1/16	4	120	32
Walker Johnson A–2	3	1/4	1	1	V	11½	2	7½	1¾	37	1	F	12	3¼	1/4	4	12	3¼	1/4	4	117	32
Walker Johnson B3	4	1/4	1¼	1¼	V	10	2	8	1¼	33½	1¼	F	13	3½	1/4	4	13	3½	1/4	4	133	32 1/16
Walter S–5	3	1/4	1/2	2	V	10	1½	18	1½	39	1½	F	15	5	1/4	4	57	2½	1/4	2	150	36
Ward LaFrance 2B–2¼–3½	3	1/4	1¼	1½	V	7	1½	16	1½	41½	1½	F	13	3½	1/4	4	13	3½	1/4	4	137½	33
Ward LaFrance 4A–3½–5	3	1/4	1¾	1¾	V	8½	1½	18	1½	41½	1½	F	15½	3¾	1/4	4	15½	3¾	1/4	4	170 1/16	37
Ward LaFrance 5A–5–7	3	1/4	1½	1¾	V	9¼	1½	18	1½	41½	1½	F	18	4	1/4	4	18	4	1/4	4	170 1/16	37
Watson B1	4	1/4	1	1 3/8	V	16½	1¼	4	1¼	40	1½	F	42	1¾	1/16	2	41	1¾	1/16	2	90 1/8	30
Watson N–3½	3	1/16	1¼	1½	V	16½	1¼	3	1¼	34	1¼	F	62	2½	1/4	2	47	2½	1/4	2	147	37
Watson U–5	3	1/16	1½	1½	V	16½	1¼	3	1¼	38½	1¼	F	15½	3¼	1/4	4	15½	3¾	1/4	4	.....	36
White Hickory H–1½	3	1/16	1¼	1	....	11	2	8	1¼	41	5/8	V	13½	3½	1/4	4	13½	3½	1/4	4	116¼	32
White Hickory H–1½	3	1/16	1¼	1	....	11	2	8	1¼	41	5/8	V	11¾	3¼	1/4	4	11¾	3¼	1/4	4	116¼	32½
White Hickory E–1	3	1/16	1¼	1	....	11	2	8	1¼	41	5/8	V	11	3	1/4	4	11	3	1/4	4	92¼	32
White Hickory K–2½	3	1/16	1½	1¼	....	9	1½	8	1¼	33¼	1¼	F	13½	3½	1/4	4	13½	3½	1/4	4	150	32
Wichita K–1	3	1/4	1 1/8	1 3/8	V	18½	1¼	12	1¼	52¾	1½	F	19½	2	1/16	4	19½	2	1/16	4	127½	30
Wichita M–2	3	1/4	1 1/8	1 3/8	V	18½	1¼	12	1¼	52¾	1½	F	49	2	1/16	2	49	2	1/16	2	126½	30
Wichita RX–3	3	1/4	1¼	1¾	V	11	1½	11	1½	40	1½	F	54	2¼	1/4	2	54	2¼	1/4	2	130	30
Wichita O–4	3	1/4	1½	1¾	V	11	1½	11	1½	40	1½	F	56½	2½	1/4	2	56½	2½	1/4	2	152½	36
Wichita S–5	3	1/4	1½	1¾	V	11	1½	11	1½	40	1½	F	66	3	1/4	2	66	3	1/4	2	163½	36
Wilcox AA–1	3	1/4	1	....	....	....	....	....	....	....	....	....	47 1/16	2½	1/16	2	33¼	2½	1/16	2	96	34
Wilcox B–1½	3	1/4	1¼	....	....	....	....	....	....	....	....	....	47 1/16	2½	1/16	2	33¼	2½	1/16	2	132	33
Wilcox C–2½	3	1/4	1¼	....	....	....	....	....	....	....	....	....	57½	2½	1/16	2	42½	2½	1/16	2	141	33
Wilcox E–3½	3	1/4	1¼	....	....	....	....	....	....	....	....	....	57½	2½	1/4	2	42½	2½	1/4	2	156	33
Wilcox F–5	3	1/4	1½	....	....	....	....	....	....	....	....	....	69 3/8	3½	1/4	2	52	3½	1/4	2	148½	36
Wilson 1½	4	1/16	....	1	....	....	....	....	....	....	....	....	39½	1¾	1/16	2	39½	1¾	1/16	2	120	33
Wilson 2½	4	1/16	....	1¼	....	....	....	....	....	....	....	....	13¼	3½	1/16	4	13¼	3½	1/16	4	126	33
Wilson 3½	4	1/16	....	1½	....	....	....	....	....	....	....	....	16	3¾	1/16	4	16	3¾	1/16	4	147	38
Wilson 5	4	1/16	....	1½	....	....	....	....	....	....	....	....	18	4	1/16	4	18	4	1/16	4	147	38¼
Winther 751–1	3	1/4	1	....	H	15¾	2	17	2	36 1/8	1	F	42	2	1/16	2	24	2	1/16	1	102	30
Winther 39–1½	3	1/4	1¼	....	V	10	1¾	4 1/8	1½	33¾	1¼	F	50	2¼	1/4	2	22½	2¼	1/4	1	120	30
Winther 430–1½	3	1/4	1¼	....	V	11¼	1½	11½	1½	30 5/8	1½	F	50	2¼	1/4	2	22½	2¼	1/4	1	120	30
Winther 450 2½	3	1/4	1¼	....	V	11½	1½	6½	1½	37½	1¾	F	52	3	1/4	2	22½	2¼	1/4	2	120	30
Winther 50–2½	3	1/4	1¼	....	V	17 7/8	1¾	8	1½	42½	2	F	52	3	1/4	2	50	2¼	1/4	2	58	33
Winther 51–2½	3	1/4	1¼	....	V	17 7/8	1¾	8	1½	42½	2	F	52	3	1/4	2	50	2¼	1/4	2	144	33
Winther 70–3½	3	1/4	1¼	....	V	17 7/8	1¾	8	1½	42½	2	F	62	3	1/4	2	60	2½	1/4	2	156	33
Winther 109–5	3	1/4	1½	....	V	21½	1¾	8	1½	42½	2	F	93	2¼	1/4	2	93	2¼	1/4	2	156	33
Winther 140–7	3	1/4	1½	....	V	12	1¾	6	1¾	42¾	2	F	93	2¼	1/4	2	93	2¼	1/4	2	156	33
Wisconsin 2 (Loganville)	3	1/4	1¼	1¼	H	17	2	17	2	34	1/4	F	58	2½	1/16	2	56½	2¼	1/16	2	114	34
Wisconsin 2½ (Loganville)	3	1/16	1¼	1¼	V	12	1½	10	1¼	40	3/4	V	58	2½	1/16	2	56½	2¼	1/16	2	120	34
Witt Will N–1½	3	1/16	1¼	1¼	V	8	1½	12	1¼	31	1¼	F	48	3¼	1/4	4	48	3¼	1/4	4	Opt	32
Witt Will P–2	3	1/16	1¼	1¼	V	8	1½	12	1¼	31	1¼	F	52	3½	1/4	4	52	3½	1/4	4	Opt	32
Wolverine J–1	4	1/16	1	1¼	V	9½	1½	11½	1½	42	1¼	F	42½	2½	1/16	2	38	1¾	1/16	2	110	34½
Wolverine J–1½	3	1/16	1	1¼	V	9½	1½	11½	1½	42	1¼	F	51	3	1/16	2	42	2	1/16	2	120	34½
Wolverine J–2	4	1/16	1	1¼	V	9½	1½	11½	1½	42	1¼	F	51	3	1/16	2	42	3	1/16	2	132	34½
Wolverine K–2½	4	1/4	1¼	1¼	V	9½	1½	11½	1½	42	1½	F	55	3	1/16	2	47½	2	1/16	2	153	34
Wolverine L 3½	4	1/4	1¼	1¼	V	9½	1½	11½	1½	44	1½	F	61½	3	1/16	2	58	2½	1/16	2	174	35 5/8
Yellow Cab M22—¾	3	1/16	1	1/16	V	7½	2	9 5/8	2	38½	5/8	V	49	2½	1/4	2	45	2½	1/4	2	60	43
Yellow Cab M42–1¼	3	1/16	1	1/16	V	7½	2	9 5/8	2	38½	5/8	V	11	3	1/4	4	11	3	1/4	4	92	32

KEY OF ABBREVIATIONS

Note: Numerals on This Page Correspond With Numerals at Head of Specification Columns on Page Following. In All Specifications—O, Own; Op or Opt, Optional

Engine:
Beav—Beaver
Bud—Buda
Cont—Continental
Dodge—Dodge Bros.
GBS—Golden, Belknap & Swartz
Gr-B—Gray-Beal
Her—Hercules
Hig—Highway
Hin—Hinkley
HSp—Herschell-Spillman
LeR—Le Roi
Lib—Liberty
LMF—Light Mfg. & Fdy.
Lyco—Lycoming
Mid—Midwest
Ster—Sterling
Sup—Supreme
TC—Twin City
Vict—Victory
Wau—Waukesha
Wei—Weidely
Wis—Wisconsin

Valve Arrangement:
H—Overhead
L—ELL-Head
S—Sleeve
T—TEE-Head

How Cooled:
A—Air
B—Pump & Thermo
C—Centrifugal
G—Gear Pump
T—Thermo-Syphon

Radiator (Make):
BW—B & W
Brm—Brenem
Bus—Bush
Can—Candler
Chic—Chicago
Eag—Eagle
EM—English-Mersick
Eur—Eureka
Fed—Fedders
Flex—Flexo
GO—G. & O.
Har—Harrison
Hoo—Hooven
Idl—Ideal
Jam—Jamestown
Kue—Kuenz
Liv—Livingston
Lng—Long
McC—McCord
May—Mayo
Mod—Modine
Per—Prefex
R-T—Rome-Turney
S-W—Sparks-Withington
Spar-Spartan
Spec—Special
Spli—Splitex
Stan—Standard

Radiator (Type):
C—Cellular
Fin—Fin Tube
H—Honeycomb
PT—Plain Tube
Whee—Wheeler
ZZT—Zig Zag Tube

Lubrication:
FS—Force and Splash
F—Force Feed
S—Splash

Carburetor:
B&B—Ball & Ball
Bent—Bennett
Cart—Carter
Eag—Eagle
Ens—Ensign
Flch—Fletcher
Holl—Holley
John—Johnson
King—Kingston
Mar—Marvel
Mas—Master
Mill—Miller
Rayf—Rayfield
Scoe—Scoe
Strm—Stromberg
Shk—Shakespeare
Sheb—Schebler
Stew—Stewart
Till—Tillotson
Zen—Zenith

Fuel Feed:
G—Gravity
P—Pressure
V—Vacuum

Governor:
Con—Continental
Del—Delaney
Dup—Duplex
Hin—Hinkley
McC—McCanna
Mer—Merrill
Mon—Monarch
Mue—Mueller
Phar—Pharo
Pier—Pierce
Rug—Ruggles
Sim—Simplex
Wau—Waukesha

Clutch (Make):
B B—Borg & Beck
B-Li—Brown-Lipe
Covt—Covert
Det—Detlaff
DG—Detroit Gear & Mach.
Dod—Dodge Bros.
Full—Fuller
GB&S—Golden, Belknap & Swartz
Hart—Hartford
Hoos—Hoosier
HS—Hele-Shaw
M-E—Merchant & Evans
Munc—Muncie
M-P—Muncie Products
T-D—Twin Disc
W-C—Warner Corporation
W-Gr—Warner Gear

Clutch (Type):
C—Cone
D—Disc
DP—Dry Plate
DD—Dry Disc
Fr—Friction
WP—Wet Plate
WD—Wet Disc

Ignition System:
Amr—American Swiss
Apo—Apollo
AtK—Atwater Kent
AuL—Auto-Lite
Bos—Bosch
Ber—Berling
Con—Connecticut
Del—Delco
Eis—Eisemann
Kin—Kingston
KW—K. W. Ignition Co.
Lor—Louraine
NE—North East
POL—Prest-O-Lite
Rm—Remy
Sim—Simms
Spl—Splitdorf
Tea—Teagle
Wag—Wagner
Wes—Westinghouse

Engine Starter:
AC—Allis-Chalmers
AK—Atwater Kent
AL—Auto-Lite
Bj—Bijur
Bos—Bosch
DL—Delco
Dy—Dyneto
GD—Gray & Davis
LN—Leece-Neville
NE—North East
RE—Remy
USL—U. S. L.
W—Westinghouse
Wg—Wagner

Gearset:
B-Li—Brown-Lipe
Cott—Cotta
Covt—Covert
D-Sea—Driggs-Seabury
Det—Detroit
Dod—Dodge Bros.
Dun—Dundore
Durst—Durston
Full—Fuller
G-Le—Grant Lees
MM—Mechanics Mach. Co.
Munc—Muncie
M-P—Muncie Products
Rock—Rockford
W-C—Warner Corporation
W-Gr—Warner Gear

Location of Gearset:
A—Amidships
J—Unit with jackshaft
R—Rear
U—Unit with engine

Universal:
A-B—Easton Mch. Co.
Acm—Acme
Arv—Arvac
Bear—Bearings Co.
Bld—Blood-Brothers
Cli—Climax
Det—Detroit
Dit—Ditwiler
Flex—Flexite
Hart—Hartford
KB—Kinsler-Bennett
Mech—Mechanics
M-E—Merchant & Evans
Nor—Norwalk
Pet—Peters
Sned—Snead
Spic—Spicer
Ster—Sterling
Ther—Thermoid
UM—Universal Machine
UP—Universal Products
Var—Varied

Springs:
All—Alloy Steel
Am—Am. Auto Parts
Arm—Armstrong
Bea—Beans
Cham—Champion
Coop—Cooper
Del—Delany
Det—Detroit
GC—Garden City
Har—Harvey
Hig—Higgins
IC—Iron City
Jax—Jaxon
Kal—Kalamazoo
Lah—Laher
Lig—Liggett
Mar—Maremont
Math—Mather
Mer—Merrill
Nat—National
Pen—Penn
Per—Perfection
Row—Rowland
Shel—Sheldon
SP—Spring Perch
Stan—Stan-Par
Ster—Sterling
Tem—Temme
Tut—Tuthill
US—United States
Wis—Wisconsin

Final Drive:
B—Bevel Gear
C—Chain
I—Internal Gear
N—Concentric Spur
P—Spur
R—Double Reduction
S—Spiral Bevel
W—Worm

Rear Axle (Make):
Amr—American
Badg—Badger
Col—Columbia
Cl—Clark
Dun—Dunkirk
Eat—Eaton, Stan-Par
Fli—Flint
Hind—Hindley
IrM—Iron Mt.
Keno—Kenosha
LM—L M Axle
Rock—Rockford
Russ—Russel
Sals—Salisbury
Sav—Savage
Shel—Sheldon
Stn—Stanweld
Thom—Thomson
Tim—Timken
Torb—Torbensen
W-M—Weston-Mott
US—United States
Vul—Vulcan
Walk—Walker
Wis—Wisconsin

Rear Axle (Type):
Flot—Floating
D—Dead
½-Fl—Semi-Floating
¾-Fl—¾-Floating

Steering Gear:
CAS—C. A. S. Products Co.
Dit—Ditwiler
Dod—Dodge Bros.
Gem—Gemmer
Jac—Jacox
KH—Keystone Hendley
Lav—Lavine
M-P—Muncie Products
Ros—Ross
Sag—Saginaw Products Co.
W-C—Warner Corporation
Woh—Wohlrab

Wheels:
Arc—Archibald
AuW—Auto Wheel
Bim—Bimel
Cla—Clark
C&M—Crane & McMahon
Day—Dayton
Det—Detroit
E&O—Eberly & Oris
Hay—Haynes
Hoo—Hoopes Brothers
Jon—Jones
Kel—Kelsey
MM—Michigan Malleable Iron Co.
Mot—Motor Wheel
Mut—Mutual
Nor—Northern
Pru—Prudden
Roy—Royer
Rus—Russell
Sal—Salisbury
Sch—Schwartz
Smi—Smith
Sta—Stanwell
StM—St. Mary
Stn—Standard
Wal—Walker
Wan—Wayne
W-L—Waterhouse & Lester
Wes—Western Wheel Co.

Rim Equipment:
Bak—Baker
Det—Detroit
Fir—Firestone
Gdy—Goodyear
Hay—Hayes
Jax—Jaxon
Kel—Kelsey
Ken—Kennedy

Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks Will be Found at the End of Gasoline Commercial Cars

See Also Replacement Table in "Service and Repair Departments." Truck Frame Dimensions Are Included in Replacement Table

(Where prices are not given it is because we have been unable to get them from authoritative sources)

* An asterisk in front of the model name indicates that corrections have been made somewhere in the specifications since the previous month

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
1000 Pounds		1		2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23		
*Dodge Brothers	730	Own	3 1/16x4 1/2	24	L	C	MeC	PT	FS	Stew	V	.....	Own	DD	NE	NE	Own	U	3	Own	Own	S	Own	½ Fl	4.16	19.4	Own	32x4*	32x4*	Kel	Kel	1987	114
Dort	685	Lyc K	3 1/16x5	19.6	L	T	Fed	C	S	Cart	V	.....	Own	C	Con	Bos	Own	U	3	MM	Lig	S	Fli	¾ Fl	4.45	15.13	Sag	31x4*	31x4*	Imp	Cle	2015	105
Vim 29	1050	Own	3 1/16x4 1/2	15.6	L	T	MeC	Fin	FS	Zen	G	.....	B.B.	DD	Wes	W	Own	U	3	Spic	Shel	W	Own	.....	5.5	.....	CAS	31x4*	31x4*	Hoo	Fir	2175	108
Vim 30	1175	Own	3 1/16x4 1/2	15.6	L	T	MeC	Fin	FS	Zen	G	.....	B.B.	DD	Wes	W	Own	U	3	Spic	Shel	W	Own	.....	5.5	.....	CAS	32x4½*	32x4½*	Hoo	Fir	2290	127
1500 Pounds																																	
Acason Fast	.....	Own	3¾x5	22.5	L	C	.....	C	F	Sheb	V	.....	Full	D	Eis	W	Full	U	3	Bld	Det	W	Timk	½ Fl	6.25	25	Ros	34x5*	34x5*	Bim	....	3080	142
Brockway E	.....	Buda WU	3¾x5½	22.5	L	T	Lng	Fin	FS	Strm	V	.....	W-Gr	DD	Rm	RE	W-Gr	U	3	Spic	Row	S	Col	Flot	5.86	25.	Gem	35x5*	35x5*	....	Fir	3450	135
*Chevrolet G	745	Own	3 11/16x4	21.7	H	T	Har	H	FS	Zen	G	.....	Own	C	Rm	AL	Own	...	3	Own	Arm	S	Own	½ Fl	5.42	18.9	M-P	31x4*	34x4½*	Hay	Jax	2167	120
Clydesdale 10	1485	Cont N	3¾x5	22.5	L	T	.....	PT	FS	Zen	V	.....	B.B.	DP	Bos	Bos	B-Li	U	3	Spic	Stan	B	Timk	½ Fl	5	16.4	Jac	34x5	34x5	.....	Fir	3100	138
Garford 15	1590	Buda MU	3¾x5½	21	L	C	Lng	PT	F	Strm	G	.....	.....	DD	AtK	AK	Own	U	3	Spic	Per	W	Timk	½ Fl	6.25	.....	Gem	34x5*	34x5	.....	....	3500	132
H. R. L.-L	2200	H-Sp 7000	3½x5	19.6	L	T	Fed	Fin	F	Zen	V	.....	Own	DP	Bos	GD	Covt	U	3	Spic	Shel	W	Wis	½ Fl	6.2	22.	Ross	34x4½*	35x5*	Sch	Gdy	3300	134
*Internat'l Speed Truck 8	1500	Lyco-Int'l	3½x5	19.6	L	T	Lng	Fin	FS	Ens	G	.....	Mun	DP	Con	AL	Mun	U	3	Sned	Stan	I	Torb	D	6.3	.....	CAS	.....	.....	Opt	.....	2600	124
Moreland R–R	1595	Her O	4 x5	25.6	L	C	Own	C	F	Zen	G	.....	B-Li	DD	AuL	AuL	B-Li	U	3	Ther	US	B	Timk	½ Fl	5.5	28	Ros	34x5	34x5	.....	.....	3350	132
Napoleon 7	1350	H-Sp 7000	3½x5	19 6	H	T	Own	H	F	Sheb	G	.....	B.B.	D	Eis	GD	MM	U	3	UP	Math	I	Torb	D	5.1	.....	Lav	33x4*	33x4*	Roy	Fir	2800	121
Ogden A2	.....	Cont N	3½x5	19.6	L	T	Chic	Fin	FS	Strm	V	.....	B-Li	DD	Spl	.....	B-Li	U	3	M-E	Tut	W	Timk	½ Fl	6.2	.....	Ros	34x5	34x5	Stn	....	3100	125
*Rainier R21	1970	Cont-N	3½x5	19.6	L	T	Har	H	FS	Zen	V	Mon	B-Li	DP	Eis	.....	B-Li	U	3	Hart	Per	W	Timk	½ Fl	7.2	23.9	Lav	35x5*	35x5*	.....	Fir	2350	125
Republic Rapid Transit	1250	Lyco KB	3½x5	19.6	L	T	Own	C	FS	Strm	V	.....	Own	DD	AuL	AL	Own	U	3	Spic	Math	I	Torb	D	5.38	15.06	Jac	32x4½*	32x4½*	Mot	Fir	2650	124
*Samson 15	595	Own	3 11/16x4	21.8	H	C	Own	PT	FS	Zen	G	Mon	Own	D	Rm	AL	Own	A	3	Own	Own	S	Own	½ Fl	6.33	21.02	Own	32x4*	32x4*	Own	Hay	2366	118
Service 12	.....	Mid 409	3¼x4½	16.9	H	C	Lng	Fin	F	Strm	G	.....	Hoos	DP	Rm	Rm	Det	U	3	M-E	Shel	B	Timk	½ Fl	6.88	22.1	Ros	32x4½*	32x4½*	Bim	Fir	2720	128
*Stewart Utility Wagon	1245	Buda	3 5/8x5 1/8	21	L	C	Bus	PT	F	Zen	G	.....	.....	DP	Rm	.....	.....	U	3	Spic	Det	I	Cl	D	5.5	16.99	Ros	34x4½*	34x4½*	Way	Fir	3150	128
Stoughton C	1240	.....	3½x5	19.6	L	C	.....	Fin	FS	Strm	G	.....	.....	DP	Wes	W	Own	...	...	Ther	.....	B	.....	.....	5.87	23.5	.....	34x4½*	34x4½*	.....	.....	2480	131
Triangle AA	1285	H-Sp	3¼x5	16.9	L	T	Per	ZZT	FS	Strm	G	.....	Full	DD	NE	NE	Full	U	3	UP	Det	I	Cl	D	6.75	20.	Gem	34x4½	34x4½	Hay	Fir	2600	115
Watson B	1865	Wau BUX	3¾x5½	22.5	L	P	GO	C	FS	Strm	G	Wau	B-Li	DP	Con	D	B-Li	U	3	M-E	Shel	W	Emp	½ Fl	6.2	20.7	Lav	35x5	35x5	Hoo	Fir	2900	128
White 15	2400	Own	3¾x5½	22.5	L	P	C	.....	C	FS	Own	G	.....	Own	D	.....	.....	Own	A	4	Own	.....	B	Own	½ Fl	.....	.....	Own	34x5*	34x5*	.....	Fir	3200	133
Yellow Cab M-22–¾	1590	Cont V-4	3¾x5	22.5	L	T	Lng	Fin	FS	Zen	G	.....	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Math	B	Timk	.....	4.9	16.31	Gem	33x4½*	33x4½*	Stn	Fir	2400	117
1 Ton																																	
Acason R	.....	Wau B.U.X.	3¾x5¾	22.5	L	P	Can	C	S	Sheb	V	Wau	Full	.....	Eis	.....	Full	U	4	Bld	Det	W	Timk	½ Fl	7.20	34.5	Ros	36x3½	36x5	Bim	Opt	3650	142
Acme 20	.....	Cont N	3¾x5	22.5	L	T	GO	C	FS	Rayf	V	Dup	B.B.	DP	Eis	GD	Cott	U	3	Bld	Det	W	Timk	½ Fl	6.2	24.8	Ros	35x5*	35x5*	Bim	.....	3050	129
Apex G	.....	Cont N	3¾x5	22.5	L	T	GO	C	FS	Rayf	V	Dup	B.B.	DP	Eis	GD	Cott	U	3	Bld	Det	W	Timk	½ Fl	7.2	28.8	Ros	34x3½	34x5	Bim	.....	3406	129
Apex	1750	Buda NU	3 5/8x5 1/8	21	L	T	GO	C	S	Strm	V	.....	Full	D	AuL	AL	Eull	U	3	Bld	Det	W	Timk	.....	6.25	.....	Lav	35x5*	35x5*	Roy	Fir	2650	130
Atlas Merchant's Dispatch	1185	Lyco	3½x5	19.6	L	T	Own	H	S	Strm	V	.....	B.B.	DD	AtK	Bj	Own	...	3	Ster	IC	W	Own	½ Fl	6	16.8	CAS	32x4½*	32x4½*	.....	.....	2650	130
Avery	.....	Own 6	3 x4	21.6	L	T	Own	C	S	Strm	V	Own	Own	DP	KW	W	Own	U	3	Pet	Math	I	Torb	D	8	26.66	Ros	34x5*	34x5*	StM	Gdy	2800	129
Bell M	1495	Buda	3 5/8x5 1/8	21	L	C	Chic	PT	F	Zen	V	.....	B.B.	DP	Eis	.....	Mun	U	3	Ther	Det	W	Timk	.....	7.2	.....	Dit	35x5	35x5	Bim	Fir	2500	126
Belmont	1350	Buda MU	3 5/8x5 1/8	21	L	C	GO	PT	FS	Zen	V	.....	Full	DP	Bos	Bos	Full	U	3	M-E	Math	B	Sals	¾ Fl	5.71	.....	Ros	34x5	34x5	Smi	Fir	.....	130
Bessemer G	.....	Cont N	3½x5	19.6	L	T	Std	C	FS	Strm	G	.....	Full	DD	Bos	Bj	Full	U	3	Arv	Per	I	Torb	D	.....	.....	Ros	35x5	35x5	Sch	Fir	3000	124
Birch 1	1285	Vict	3½x5	19.6	l	T	Chic	PT	FS	Strm	G	.....	Full	DD	Con	.....	Full	U	3	UM	.....	I	Cl	D	.....	.....	Lav	32x3½*	32x4*	.....	.....	3200	132
Casco Model A	1785	Buda MU	3 5/8x5 1/8	21.2	L	C	GO	C	F	Zen	V	.....	Full	DD	Bos	Bos	Full	U	3	Spi	Stan	S	Col	½ Fl	5.85	23.46	Woh	34x5	34x5	Arc	Fir	3100	130
*Chevrolet T	1125	Own	3 11/16x3¼	21.7	H	C	Har	H	FS	Zen	G	Mon	Own	C	Rm	AL	Own	...	3	Arv	Arm	W	Own	½ Fl	7	24.67	M-P	33x4*	35x5*	Hay	Jax	2840	125
Collier 18	.....	Cont N	3½x5	19.6	T	T	Lng	PT	S	Zen	V	Mon	Full	DP	Eis	.....	Full	U	3	UP	Math	W	Timk	½ Fl	7.75	31	Ros	34x4	34x5	Bim	Fir	3210	140
Corbitt E–22	1480	Cont N¾	3¾x5	22.5	L	P	MeC	Fin	FS	Strm	V	.....	B-Li	DD	Eis	.....	B-Li	U	3	Hart	Shel	W	Shel	½ Fl	6	20	Ros	34x3½	34x4	Bim	Fir	3730	130
Day Elder AS	1600	Cont N	3¾x5	22.5	L	T	Bus	Fin	FS	Zen	G	.....	Covt	DD	Eis	.....	Covt	U	3	Hart	IC	W	Shel	½ Fl	6	21.96	Gem	35x5*	35x5*	Jon	Fir	3000	128
Dearborn E (Speed)	1600	Buda MU	3 5/8x5 1/8	21	L	C	Chic	PT	F	Strm	V	.....	Full	DP	Bos	Bos	Full	U	3	Hart	.....	W	Wis	½ Fl	6.2	18.6	Dit	35x5*	35x5*	.....	Fir	3280	133
Defiance G	1695	Hig	3¾x5	22.5	L	P	Per	C	FS	Strm	V	.....	B.B.	D	Eis	AL	G-Le	U	3	Arv	Det	B	Eat	.....	5.5	.....	Own	35x5*	35x5*	StM	Fir	2700	128
Denby 31	1485	Cont	3¾x5	19.6	L	T	Lng	PT	FS	Strm	G	.....	Full	DD	Eis	RE	Full	U	3	UP	Det	B	Col	½ Fl	5.85	23.46	Ros	35x5*	35x5*	Mot	Fir	2840	130
Diehl A	.....	Cont N	3½x5	19.6	L	T	.....	H	FS	Zen	G	.....	B.B.	.....	Sim	.....	Durs	...	3	KB	Mar	I	Torb	D	5.3	.....	Ros	34x4½*	35x5*	Sch	Fir	2400	115
*Eugol	1795	Buda MU	3 5/8x5 1/8	21	L	C	Chic	PT	F	Strm	V	.....	UC	DD	Wes	W	UC	U	3	Pet	Math	W	Timk	½ Fl	6.25	30.3	Ros	34x5*	34x5*	Bim	Fir	3500	135
Federal SD	1800	Cont J-4	3¾x5	22.5	L	C	Own	Fin	F	Zen	V	Phar	B.B.	DP	Eis	.....	Own	A	3	Spic	Math	W	Timk	½ Fl	7.2	20.65	Gem	35x5*	36x6*	Det	Det	3600	132
Ford T	285	Own	3¾x4	22.5	L	T	Own	Fin	S	.....	G	.....	Own	.....	Own	.....	Own	U	2	Own	Own	W	Own	½ Fl	Opt	19.9	Own	30x3½*	32x4½	.....	.....	1430	124
Forschler A	.....	Cont N	3½x5	19.6	L	T	EM	.....	FS	Zen	V	Dup	Full	.....	Bos	Op	Full	...	3	Hart	Own	W	Shel	.....	.....	.....	Ros	34x3	34x4	.....	.....	3450	120
Fulton A	1495	H-Sp-7000	3½x5	19.6	L	T	Liv	H	FS	Cart	G	.....	DP	B.B.	Ber	W	Durs	U	3	Spic	Row	B	Col	.....	6.8	.....	Lav	35x5	35x5	Hoo	Fir	2800	130
*Gary F	1675	Buda WU	3¾x5	22.5	L	T	Chic	Fin	S	Mas	G	Pier	Full	DD	Eis	.....	Full	U	3	Hart	Tut	W	Timk	½ Fl	.....	.....	Ros	36x3½	36x5	Pru	.....	3200	130
G. M. C. K-16	1295	Own	3 3/16x5½	19.6	L	T	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Ow	Own	U	3	UM	Det	B	Own	¾ Fl	6	21.9	Own	34x5*	34x5*	Kel	...	3300	132
Graham Brothers	1265	Dodge	3 7/16x4½	24	L	T	MeC	PT	FS	Stew	V	.....	Dod	DD	NE	NE	Dod	U	3	Var	Det	S	Own	½ Fl	6.28	29.29	Dod	33x4½*	34x5*	.....	.....	2515	140
*Gramm–Pioneer 10 Speed T	1365	Lyco	3½x5	19.6	L	C	Own	Fin	S	Strm	G	.....	B.B.	DP	Con	AL	.....	U	3	Own	Per	B	Sals	¾ Fl	5.75	21	Ros	33x5*	33x5*	.....	Fir	2370	129
Higrade A18	2100	Cont N	3½x5	19.6	L	T	Per	PT	FS	Zen	V	Dup	Full	DD	Stm	AL	Full	U	3	Bld	Per	W	Shel	.....	7.7	22.75	Lav	35x5	35x5	Det	Fir	2700	115
Independent B (Iowa)	1665	Cont N	3½x5	19.6	L	T	GC	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	3	Bld	GC	I	Ruse	D	.....	.....	Lav	34x3	34x4	StM	Fir	3450	135
*International 21	1750	Own	3 1/16x5¼	19.6	L	C	Own	Fin	FS	Ens	G	Own	Own	DP	Bos	Own	Own	A	3	Own	.....	I	Own	D	7	25.	Own	.....	.....	Own	.....	3080	115

Kearns	1150	H-Sp. 7000	3½x5	19.6	L	T	Own	H	FS	Zen	V	Pier	B.B.	DD	Ber	Dy	G-Le	U	3	M-E	Math	I	Torb	.	5.3	24.	Lav	32x4½*	32x4½*	.....	Fir	2000	118
Kissel Express	1585	Own 80000	3⅞x5½	24.1	L	C	McC	PT	S	Strm	V	.....	W-Gr	DP	Rm	.....	W-Gr	U	3	Spic	Math	W	Timk	Flot	5.17	18.9	Jac	34x5*	34x5*	StM	.....	3780	140
Kleiber AA	.....	Cont J-4	4⅛x5¼	27.2	L	C	Per	C	FS	Strm	G	Sim		DD	Bos	.....	B-Li	U	3	Spic	Shel	W	Timk	½Fl	7.1	31.	Ros	34x3½	34x5	W-L	.....	4200	130
*Larrabee-Deyo X-2	1725	Con 7R	3¼x4½	24.3	L	C	Fed	Fin	F	Zen	G	.....	B-Li	DD	Bos	Bos	B-Li	U	3	Nor	Shel	B	Shel	¾Fl	5.75	25.5	Gem	34x5	34x5	.....	Fir	3350	138
Luedinghaus C	1695	H-Sp 7000	3½x5	19.6	L	T	Own	PT	FS	Sheb	G	.....	B.B.	D	Wei	W	G-Le	U	3	Spic	Tut	W	Wis	½Fl	6.2	18.32	Lav	35x5*	35x5*	StM	.....	2850	130
*Menominee Hurryton	1650	Wis SU	4 x5	25.6	H	C	Own	C	F	Strm	G	.....	Full	DP	Eis	Bos	Full	U	3	Spic	Per	S	Timk	½Fl	4.58	18.3	Ros	34x5	34x5	Stn	Fir	3500	132
Moreland BX	1980	Her O	4 x5	25.6	L	C	Own	C	F	Zen	P	.....	B-Li	DD	AuL	AL	B-Li	U	3	Ther	US	W	Timk	½Fl	7	28	Ros	36x3½	36x6	Smi	.....	3900	132
Napoleon 9	1535	Vict T	3½x5	19.6	H	T	Own	PT	F	Sheb	G	.....	Full	DD	Con	AL	Full	U	3	Bld	Math	I	Cl	D	6.1	18.1	Lav	35x5*	35x5*	Roy	Fir	3200	133
Nash 2018	1595	Own-4	3¾x5¼	22.5	L	C	.....	PT	F	Strm	G	Sim	B.B.	DP	Eis	AL	.....	U	3	Own	Har	I	Cl	D	6.8	21.85	Lav	34x3	34x4	AuW	.....	3400	130
Norwalk	1595	Lyco K	3½x5	19.6	L	T	Stan	C	FS	Zen	V	.....	B.B.	D	Del	Dy	G-Le	.....	3	UM	Stan	W	Stan	¾Fl	7.75	......	CAS	34x3½	34x4	E&O	Fir	2940	130
Oldsmobile	1095	Own	3 11/16x5¼	21.7	H	P	Own	C	FS	Zen	V	.....	B.B.	D	Rm	AL	W-Gr	U	3	Spic	Per	I	Torb	D	6.5	22.8	Jac	35x5*	35x5*	AuW	Jax	2465	128
Parker C22	1875	Wau BUX	3¾x5¼	22.5	L	C	Own	PT	S	Strm	V	Wau	B-Li	DD	Eis	W	B-Li	U	3	Bld	Tut	W	Timk	½Fl	6.2	25.4	Lav	34x5	34.5	Bim	.....	3400	130
Patriot Revere	1380	Cont N	3¾x5	22.5	L	T	Own	C	FS	Strm	V	.....	B.B.	DD	AtK	Bj	Cont	A	3	Ther	Mar	W	Dun	½Fl	6.2	22.69	CAS	35x5	35x5	Bim	Gdy	2800	129
Pioneer AA, (Chicago)	1550	GBS	3¾x4¼	22.5	L	T	Own	H	F	Zen	V	.....	DG	D	Bos	AL	G-Le	U	3	Ther	GC	W	IrM	¾Fl	6.1	25.1	Wol	32x4½*	32x4½*	Bim	Fir	2500	132
*Rainier R-29	2150	Cont N	3¾x5	19.6	L	T	Har	H	FS	Zen	V	Mon	B-Li	DP	Eis	.....	B-Li	U	3	Hart	Per	W	Shel	.....	7.8	......	Lav	34x3	34x4	.....	Fir	2950	133
Republic 10	1395	Cont N 3¾	3¾x5	22.5	L	T	Own	C	FS	Strm	G	.....	Full	DD	Bos	.....	Full	U	3	Spic	Math	I	Torb	D	6.28	18.21	Jac	34x3	34x4	Nor	Fir	2956	124
Republic 10-E	1695	Cont N-3¾	3¾x5	22.5	L	T	Own	C	FS	Strm	G	.....	Full	DD	Bos	.....	Full	U	3	Spic	Math	I	Torb	D	6.28	25.12	Jac	34x5*	34x5*	Nor	Fir	3225	124
Ruggles 20	1195	Cont N	3¾x5	22.5	L	T	Per	C	FS	Strm	V	.....	B-Li	DD	Rm	Rm	B-Li	U	3	Spic	Det	B	Col	¾Fl	5.12	20.48	Jac	34x5*	34x5*	Nor	Fir	2950	124
Sanford W-15	.....	Cont N	3¾x5	22.5	L	C	R-T	Cel	S	Zen	V	.....	B-Li	DP	.....	Dy	B-Li	U	3	Spic	.....	U	Shel	½Fl	6.5	26.67	Ros	36x6	36x6	.....	Fir	3800	137
Schwartz A	1685	Lyc KB	3½x5	19.6	L	T	G&O	H	S	Car	V	.....	Full	DP	Wes	Wes	Full	U	3	M-E	Row	B	Eat	½Fl	6.14	24.6	Ros	34x4½*	34x4½*	Sch	Fir	2850	130
*Signal NF	1950	Cont J4	3¾x5	22.5	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DP	Eis	.....	B-Li	A	3	UM	Det	W	Timk	½Fl	7.2	......	Ros	34x5*	36x6*	StM	.....	3580	132
Southern 10	2090	Buda WU	3¾x5⅛	22.5	L	T	R-T	PT	S	Zen	V	Pier	Full	DD	Bos	.....	Full	U	3	.....	Shel	W	Shel	.....	.....	......	Ros	35x5	35x5	.....	.....	.....	130
*Stoughton A	1790	Wau Bux	3¾x5¼	22.5	L	C	Own	Fin	FS	Strm	G	Wau	B-Li	DD	Eis	.....	B-Li	U	3	Ther	Shel	W	Shel	½Fl	6	24	Lav	34x5*	34x5*	Bim	Gdy	3300	130
Superior D	1650	Cont N-¾	3¾x5	22.5	L	T	Idl	C	FS	Strm	V	Pier	Full	DD	Eis	.....	Full	U	3	Arv	Tut	I	Torb	D	7.1	20.7	CAS	35x5*	35x5*	Sch	Fir	2950	124
*Transport 15	1295	Cont N	3¾x5	22.5	L	T	.....	.....	FS	Strm	V	.....	Full	DP	Rm	.....	Full	...	3	Sned	Det	B	.....	F	5.1	20.4	Lav	32x4½	32x4½	.....	Fir	2950	128
Ursus T 30	2050	Buda MU	3⅝x5⅛	21.	L	T	.....	PT	FS	Strm	V	.....	B-Li	DP	Wes	W	B-Li	...	3	Ther	.....	W	Timk	Flot	.....	......	Ros	34x5*	34x5*	Roy	Fir	.....	132
Vim 31	1975	Her-CU-2	3¾x5⅛	22.5	L	P	McC	Fin	F	Zen	G	.....	B-Li	D	Spl	W	B-Li	U	3	Spic	Shel	W	Shel	.....	6.5	......	Gem	35x5*	35x5*	Hoo	Fir	3790	125
White Hickory E	.....	Cont N-¾	3¾x5	22.5	L	C	Chic	Fin	FS	Strm	V	Sim	Full	DD	Eis	.....	Full	U	4	M-E	Shel	W	Timk	½Fl	7.2	21.6	Lav	34x5*	34x5*	Bim	Fir	3165	124
Wichita K	1895	Wau-BX	3¾x5¼	22.5	L	G	.....	PT	F	Strm	G	Wau	Own	C	Wag	.....	B-Li	A	4	Own	Det	W	Shel	½Fl	7.8	40.56	Ros	36x3	36x4	Bim	.....	3650	144
Wilcox AA	.....	Buda	3¾x5½	22.5	L	D	.....	PT	S	Strm	V	Dup	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Shel	W	She	½Fl	7.7	25.8	Gem	35x5*	35x5	.....	.....	3600	130
Winther Delivery Special	1795	H-Sp 7000	3½x5	19.6	L	T	Brm	PT	F	Strm	V	.....	W-Gr	DD	Wes	W	W-Gr	U	3	Pet	Det	I	Torb	D	6.6	21.4	Lav	34x4½*	35x5*	Mut	Fir	2700	135
Wisconsin A (Sauk City)	1750	Cont	3¾x5	22.5	L	C	Chic	PT	F	Strm	V	Phar	B-Li	DD	Bos	Bos	B-Li	U	3	Spic	Det	W	Timk	½Fl	6¾	......	Lav	34x5*	34x5*	Bim	Gdy	3400	132
Wolverine J-1	2125	Cont J-4	3¾x5	22.5	L	G	Lng	Fin	F	Strm	G	Phar	Full	DD	Eis	Bos	Full	U	3	UP	Am	I	Russ	D	8.2	32.8	Gem	34x3½	34x4	Hay	Gdy	3300	140
1¼ Ton																																	
Clydesdale 18	1890	Cont N-3¾	3¾x5	22.5	L	T	Own	PT	FS	Zen	V	Own	B-Li	DD	Eis	Bj	B-Li	U	3	Spic	Stan	W	Timk	½Fl	5	16.6	Ros	34x5*	34x5*	.....	.....	3200	136
Commerce T	1450	Cont N	3¾x5	22.5	L	T	Lng	Fin	S	Zen	V	.....	DG	C	Eis	Bj	Det	U	3	Spic	Det	B	Sals	¾Fl	5.71	18.2	Jac	34x4½	34x4½	Bim	Fir	2900	127
Dependable A	1750	Buda MU	3⅝x5⅛	21.	L	C	Lng	Fin	F	Zen	V	Mon	B.B.	DD	Spl	AL	Det	U	3	Acm	Per	W	Timk	½Fl	6.25	20.55	Ro	35x5*	36x6*	Bim	Fir	4000	134
Diamond T-O-3	1975	Hin	3¾x5¼	22.5	L	C	GO	Fin	F	Strm	V	.....	Covt	DD	Bos	.....	Covt	U	3	Spic	Math	W	Wis	½Fl	6.20	26.06	Gem	36x3½	36x4	.....	.....	3800	132
Eagle 101	1875	Buda MU	3⅝x5⅛	22	L	C	Own	C	F	Zen	G	Opt	Covt	DD	Eis	Bos	Covt	U	3	M-E	Cham	I	Torb	D	6.6	24	Ros	34x5	34x5	Stn	Fir	.....	130
Garford 25 B	1990	Buda WU	3¾x5⅛	22.5	L	C	Own	Fin	FS	Strm	V	.....	.....	DD	Spl	.....	Own	A	3	Spic	Per	W	Timk	½Fl	7.75	......	Ros	36x3½	36x4	.....	.....	4000	135
Menominee HT	2000	Wis CAU	3¾x5	22.5	L	C	Own	Fin	FS	Strm	G	Mon	Det	DP	Eis	Opt	Cott	U	3	Spic	Tut	W	Wis	½Fl	7.75	28.52	Ros	34x3½	36x5	Stn	Fir	3525	130
Reo F	1245	Own	4⅛x4½	27.2	H	C	Own	PT	S	John	G	.....	Own	DD	NE	NE	Own	A	3	Own	Pen	B	Own	Flot	4.7	17.3	Own	34x4½*	34x4½*	Pru	Fir	2560	128
*Samson 25	995	Own	3 11/16x5¼	21.8	H	C	Own	Pt	FS	Zen	G	Mon	Own	D	Rm	AL	Own	A	3	Own	Own	B	Own	½Fl	6.83	24.12	Own	35x5*	35x5*	Own	Hay	2635	118
Service 15	.....	Mid 408	3⅝x5	21	L	C	Lng	Fin	F	Sheb	G	.....	B-Li	DD	Rm	RE	B-Li	U	3	M-E	Shel	S	Eat	½Fl	5.625	22.1	Own	34x4½*	35x5*	Det	.....	3100	132
Stewart 15	1445	Buda MU	3⅝x5⅛	21	L	C	Bus	PT	F	Zen	G	.....	Full	DP	Eis	Dy	Full	U	3	Spic	Det	I	Cl	D	6.7	26.8	Ros	35x5*	35x5*	Way	Fir	3200	130
Thomart Speed	1795	Hin	4 x5¼	25.6	L	C	Fed	H	F	Strm	G	.....	War	DP	Wes	W	W-Gr	U	3	.....	Stan	S	Eat	½Fl	5.125	......	Ros	34x5*	34x5*	Bim	Fir	3600	134
U.S.U.	.....	Own	3⅝x5⅛	21.2	L	C	Lng	Fin	F	Strm	V	.....	Full	DD	Bos	Bos	Full	U	3	Bld	Shel	B	Cl	½Fl	6.25	25	Lav	34x5	34x5	Sch	Fir	3400	138
Yellow Cab M42 1¼	1640	Cont 4-V	3¾x5	22.5	L	T	Lng	Fin	FS	Zen	G	.....	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Math	W	Timk	½Fl	7.2	24	Gem	35x5*	35x5*	Stn	Fir	2850	130
1½ Ton																																	
Acason RB	.....	Wau BUX	3¾x5¼	22.5	L	P	Can	C	S	Sheb	V	Wau	Full	.....	Eis	.....	Full	U	4	Bld	Det	W	Timk	½Fl	7.75	37.2	Ros	36x3½	36x6	Bim	Opt	3850	142
Ace 1½	.....	Buda WU	3¾x5⅛	22.5	L	T	Mod	ZZT	S	Zen	V	.....	Full	DP	Eis	W	Full	A	3	UM	Math	W	Timk	½Fl	7.75	30.1	Ros	34x3½	34x5	Sch	Fir	4750	144
Acme 30	.....	Cont N	3¾x5	22.5	L	T	GO	C	FS	Rayf	V	Dup	B.B.	DP	Eis	GD	Cott	U	3	Bld	Det	W	Timk	½F	7.2	......	Ros	34x3½	34x5	Bim	.....	3400	129
Ajax B-2	.....	Wei MAU	3¾x5½	22.5	H	G	G&O	.....	F	Strm	V	.....	Full	D	Wes	W	Full	...	3	Hart	Mer	W	Timk	½Fl	7.20	28.8	Ros	34x5*	36x6*	Smi	Fir	3242	134
Apex D	1915	Buda WU	3¾x5⅛	22.5	L	T	GO	C	F	Strm	V	.....	Full	D	AuL	Op	Full	U	3	Bld	Det	I	Torb	D	8.1	24.1	Lav	34x3½	34x4	Roy	Fir	3070	130
*Armleder 21B	2425	Buda CTU	3¾x5¼	22.5	L	P	Lng	Fin	F	Zen	V	.....	Full	DD	Bos	W	Full	U	3	Spic	Math	W	Timk	Flot	7.75	29	Ros	34x3½	34x6	StM	.....	4400	Op
*Armleder 40B	2850	Buda HTU	4¼x5½	28.9	L	P	Lng	Fin	F	Zen	G	Phar	B-Li	DD	Bos	W	B-Li	U	4	Spic	Math	W	Timk	Flot	7.75	......	Ros	34x3½	34x6	StM	.....	4500	...
*Armleder 40C	2850	Cont C-4	4⅛x5¼	27.2	L	P	Lng	Fin	S	Zen	G	.....	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Math	W	Timk	Flot	7.75	29	Ros	34x3½	34x6	StM	.....	4500	Op
Atco B	.....	Buda CTU	3¾x5¼	22.5	L	C	Chic	PT	F	Strm	G	.....	Full	D	Eis	W	Full	U	3	Hart	GC	W	Wis	.....	7.25	29	Ros	34x5*	36x6*	Smi	Fir	3900	132
Atco B 1	.....	Buda CTU	3¾x5¼	22.5	L	C	Chic	PT	F	Strm	G	.....	Full	D	Eis	W	Full	U	3	Hart	GC	I	Torb	D	7	28	Ros	34x5*	36x6*	Std	Fir	4200	132
Atterbury 20R	2475	Cont J4	3¾x5	22.5	L	C	Own	Fin	F	Zen	V	Sim	Full	DD	Ber	.....	Full	U	3	Spic	SP	W	Timk	¾Fl	7.75	31	Ros	34x3½	34x5	Arc	Fir	4500	144
Autocar F	1950	Own 2	4¾x4½	18	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A	3	.....	.....	R	Own	Flot	8.3	33.2	Own	34x4	34x6	Hoo	.....	3600	97
Autocar G	2050	Own 2	4¾x4½	18	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A	3	.....	.....	R	Own	Flot	8.3	33.2	Own	34x4	34x6	Hoo	.....	3700	120
Available H1½	2450	Her CU3	4 x5⅛	25.6	L	C	Chic	Fin	F	Strm	V	McC	B-Li	DD	Bos	.....	B-Li	U	3	M-E	Tut	W	Timk	½Fl	7	28	Ros	36x3½	36x5	Sch	.....	4000	145
Bell E	2100	Buda	3¾x5¼	22.5	L	C	Chic	PT	F	Strm	V	Dup	B.B.	DP	Eis	.....	Det	U	3	UP	Det	I	Russ	D	8.8	25.7	Gem	35x5*	36x6*	Bim	Fir	3500	136
Bessemer H2	.....	Cont-N¾	3¾x5	22.5	L	T	Sta	C	FS	Strm	G	.....	B.B.	DP	Bos	Bj	B-Li	A	3	Arv	Per	R	LM	½Fl	.....	......	Ros	36x3½	36x5	Sch	Fir	3800	144
Bridgeport A 1½	2350	Buda WU	3¾x5⅛	22.5	L	C	Own	Fin	FS	Strm	G	Pier	B.B.	D	Eis	.....	B-Li	U	3	Hart	Per	W	Timk	½Fl	7.25	......	Ros	34x3½	36x6	Jon	Fir	3800	144
Brinton C	2250	Cont N-3¾	3¾x5	22.5	L	C	Bus	PT	F	Strm	G	.....	B-Li	D	Bos	.....	B-Li	U	3	Spic	Tut	W	Wis	½Fl	.....	33.6	Ros	34x4	34x5	Sch	.....	3900	138
*Brockway S-5	.....	Cont J-4	3¾x5	22.5	L	C	Bus	Fir	F	Strm	V	Phar	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Mer	W	Timk	½Fl	7.75	31.2	Gem	36x4	36x6	Hoo	.....	4000	140
*Buffalo Model 9	2750	Her CU-3	4 x5⅛	25.6	L	C	Own	T	F	Zen	V	Sim	Covt	D	Bos	Bos	Covt	...	..	Spic	Shel	W	Shel	½Fl	7.75	......	Ros	Opt	Opt	Wan	Gdy	5400	140
Capitol G-1½	2975	Wis-CAU	3¾x5	22.5	L	C	GO	Fin	F	Strm	G	Sim	Det	DD	Bos	W	Cott	U	4	Spic	SP	W	Wis	½Fl	6.2	32.3	Gem	35x5*	38x7*	.....	Fir	4600	144
Chicago C1½	.....	Her-CU2	4 x5⅛	25.6	L	C	Brm	PT	F	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	U	3	Pet	Math	W	Timk	½Fl	7	25.8	Ros	36x3½	36x5	Opt	Stn	4500	144
Climber A-20	2050	H-Sp 7000	3½x5	19.6	L	T	Chic	ZZT	FS	Strm	V	.....	Hart	DP	AtK	W	Mun	U	3	Hart	Lah	I	Torb	D	8	36.1	Ros	36x6*	38x7*	Roy	Fir	4150	146
Clydesdale 20	2385	Cont	3¾x5	22.5	L	T	Own	PT	FS	Zen	V	Own	B-Li	DD	Eis	Bj	B-Li	U	4	Spic	Stan	W	Timk	½Fl	6.2	20.4	Ros	34x5*	34x5*	.....	.....	3500	136
Collier 19	.....	Cont N¾	3¾x5	22.5	T	P	Lng	PT	S	Zen	V	Mon	Full	DP	Eis	.....	Full	U	3	UP	Math	W	Timk	½Fl	7.75	31	Own	36x4	36x6	Bim	Fir	4000	144
Commerce 12	1800	Cont N	3¾x5	22.5	L	T	Lng	Fin	S	Zen	V	.....	B-Li	DP	Eis	Bj	B-Li	U	4	Spic	Det	I	Torb	D	6.2	26.3	Jac	35x5	35x5	Bim	Fir	3100	130
Concord A	3150	Buda ITU	4 x5½	25.6	L	C	Bus	PT	F	Zen	G	Mon	B-Li	DP	Eis	.....	B-Li	U	4	Spic	Per	W	Timk	½Fl	8.75	35	Ros	36x3½	36x5	Arc	Fir	5200	140
Corbitt D-22	2200	Cont N-¾	3¾x5	22.5	L	T	McC	Fin	FS	Strm	V	Sim	B-Li	DD	Eis	.....	B-Li	U	3	Hart	Shel	W	Shel	½Fl	6.5	21.3	Ros	34x3½	34x5	Bim	Fir	4000	140
Cyclone A	2300	H-Sp 7000	3½x5	19.6	L	T	Lng	PT	FS	Sheb	G	.....	W-Gr	D	Wes	W	W-Gr	U	3	Nor	Row	I	Torb	D	8.23	26.66	Ros	34x5*	36x6*	Day	Opt	3000	136
Dart S	.....	Buda WU	3¾x5⅛	22.5	L	T	Own	C	S	Zen	V	Pier	Full	DD	Eis	.....	Full	U	3	Spic	Per	W	Own	.....	7.5	22.5	Ros	34x3½	34x6	Pru	.....	3800	140
Day Elder B	2000	Cont N	3¾x5	22.5	L	T	Bus	Fin	FS	Zen	G	.....	Covt	DD	Eis	.....	Covt	U	3	Hart	IC	W	Shel	½Fl	8.75	32.03	Gem	34x3½	34x5	Jon	Fir	3300	144
Dearborn F	2180	Buda WU	3¾x5⅛	22.5	L	T	Chic	Fin	FS	Strm	V	.....	Full	DP	Bos	.....	Full	U	3	Arv	Tut	W	Wis	½Fl	8.5	25.5	Dit	34x4	34x5	.....	.....	3280	126
Dearborn FX	2300	Buda WU	3¾x5⅛	22.5	L	T	Chic	Fin	FS	Strm	V	.....	Full	DP	Bos	.....	Full	U	3	Hart	Tut	W	Wis	½Fl	8.5	25.5	Dit	34x4	34x5	.....	.....	3600	138
Defiance D	2095	Hig	3¾x5	22.5	L	P	Per	C	FS	Strm	V	.....	B.B.	DP	Eis	AL	G-Le	U	3	Arv	Det	I	Torb	D		21	Own	35x5*	36x6*	StM	Fir	3200	140
*Denby 33	2145	ContN¾	3¾x5	22.5	L	T	Lng	PT	FS	Strm	G	.....	Full	DD	Eis	RE	Full	U	3	Up	Det	I	Cl	D	7.1	27.32	Ros	35x5*	38x7*	Mot	Fir	3740	136
Diamond T-Farm Spec.	2525	Hin	3¾x5¼	22.5	L	C	GO	Fin	F	Strm	V	Own	Covt	DD	Bos	.....	Covt	U	3	Spic	Math	W	Wis	½Fl	8.2	29.9	Gem	36x3½	36x5	.....	.....	5100	144
*Diamond T—T	2250	Hin	3¾x5¼	22.5	L	C	GO	Fin	F	Strm	V	Own	Covt	DD	Bos	.....	Covt	U	3	Spic	Math	W	Timk	½Fl	8.2	29.9	Gem	36x3½	36x5	.....	.....	4000	144
Diehl B	.....	H-Sp 7000	3½x5	19.6	L	T	.....	H	FS	Zen	G	.....	M-E	.....	Bos	.....	Durs	...	3	M-E	Row	I	Torb	D	5.3	......	Ros	....	....	Wan	.....	2500	120

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
1½ Ton—Con'd		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23		
D-Olt A	2450	H-Sp 7000	3½x5	19.6	L	T	GO	PT	S	Zen	V	Dup	B.B.	.....	Bos	.....	Cott	...	4	Spic	SP	W	Timk	½Fl	8.25	.....	Ros	34x4	34x5	.....	.....	4500	168
Douglas G–1½	1750	Buda WU	3¾x5½	22.5	L	S	Own	PT	P	Sheb	V	.....	Full	DP	Eis	.....	Full	U	3	Arv	Own	I	Torb	D	8	23.1	Ros	24x3½	34x5	Own	Fir	3725	126
Douglas GW	1750	Wei	3¾x5½	22.5	H	C	Own	PT	F	Sheb	V	.....	B.B.	DP	Eis	.....	G-Le	U	3	Arv	Own	I	Torb	D	8	23.1	Ros	24x3½	34x5	Own	Fir	3725	126
Erie E-1½	.....	Buda CTU	3¾x5½	22.5	L	C	Fed	C	FS	Zen	V	.....	Full	D	Bos	Bos	Full	A	3	Arv	Per	W	Shel	½Fl	7.8	31.2	Ros	36x6*	36x6*	Bim	Fir	4400	144
Federal TE	2175	Cont C4	4 1/16x5¼	27.2	L	C	Own	PT	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Mat	W	Timk	Flot	8.5	37.4	Gem	36x3½	36x5	Sch	Fir	4250	144
Forschler C	.....	Cont N	3½x5	19.6	L	C	Own	.....	FS	Zen	V	Dup	Full	.....	Bos	Op	Full	...	3	Hart	Own	W	Shel	.....	.....	.....	Ros	36x3½	36x5	Smi	.....	3670	120
Front Drive C	2800	Buda CTU	3¾x5½	22.5	L	G	EM	PT	S	Zen	G	Pier	B.B.	DD	Spl	Op	Own	A	3	Own	Own	W	Own	½Fl	8	32	Lav	34x5	34x5	Stn	.....	3200	Op
Gersix M	3100	Buda ITU	4 x5½	25.6	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	U	3	Bld	Tut	W	Shel	.....	7.7	31	Ros	36x3½	36x6	Jon	.....	4620	142
Giant 15A	2250	Cont N	3¾x5	22.5	L	C	Idl	.....	FS	Sheb	G	.....	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Timk	½Fl	7.8	24.97	Jac	34x3½	34x5	Way	.....	3450	138
Graham Brothers	1325	Dodge	3 7/16x4½	24	L	T	MoC	PT	FS	Stew	V	.....	Dod	DD	NE	NE	Dod	U	3	Var	Det	S	Own	½Fl	6.28	29.29	Dod	33x4½*	36x6	.....	.....	2540	140
*Gramm-Pioneer 15	1900	Cont N	3¾x5	22.5	L	T	Own	Fin	S	Strm	G	.....	Full	DD	NE	NE	Full	U	3	Own	Per	I	Cl	D	7.6	30.4	Ros	36x3½	36x5	Bim	Fir	3660	138
*Gramm-Pioneer 65	2500	Cont N	3¾x5	22.5	L	T	Own	Fin	S	Strm	G	.....	Full	DD	NE	NE	Own	A	3	Own	Per	W	Eat	½Fl	7.8	28	Ros	36x3½	36x5	Bim	Fir	3860	138
G. W. W. Farm Spec	1685	Wei	3¾x5½	22.5	H	P	Chic	.....	F	Sheb	G	.....	Full	.....	Del	Del	Full	U	3	Acm	GC	I	Cl	D	7	.....	Woh	35x5	35x5	Roy	Fir	3200	142
Higrade B20	2500	Cont K4	4 1/16x5¼	27.2	L	C	Per	PT	FS	Zen	V	.....	Full	DP	Eis	AL	Full	U	3	Bld	Per	W	Shel	.....	7.7	31	Lav	36x6	36x6	Det	Fir	3100	130
H R.L.-R	3250	Hink HAA	4 x5½	25.6	L	C	Fed	Fin	F	Zen	V	Hin	B-Li	DP	Bos	GD	B-Li	U	4	Spic	Shel	W	Shel	.....	7.75	30	Ros	36x4	36x7	Sch	Gdy	4560	144
Hug	1350	Buda MU	3 5/16x5½	21	L	C	Per	.....	F	Zen	G	.....	W-Gr	DP	Spl	.....	W-Gr	U	4	Bld	Tut	.....	.....	.....	5.5	4.84	Ros	34x5	34x5	Stn	Fir	2900	120
Hurlburt	2290	Buda IU	4 x5½	25.6	L	C	Own	.....	FS	Flch	G	Dup	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Own	.....	.....	.....	Ros	34x4	34x5	Way	.....	4000	148
*Huron-Erie	2040	Buda CTU	3¾x5½	22.5	L	C	.....	Fin	F	Zen	V	Pier	B.B.	D	Bos	.....	Cott	U	4	Det	Det	I	Cl	D	7	36.4	Jac	35x5*	38x7*	AuW	Fir	.....	144
Independent G (Iowa)	2040	Cont N	3¾x5	22.5	L	C	GC	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	3	Bld	GC	I	Russ	D	8.2	.....	Lav	34x3½	34x5	StM	Fir	3875	142
Independent F (Ohio)	2385	Cont N	3¾x5	22.5	L	C	Lng	PT	F	Strm	G	.....	Full	DP	Eis	.....	Full	U	3	Ster	Math	W	Wis	.....	8.2	33.1	Ros	36x3½	36x5	.....	.....	3400	140
Indiana 12	.....	Wau BUX	3¾x5¼	22.5	L	C	McC	Fin	F	Strm	G	Wau	B.B.	DP	Eis	.....	B-Li	A	3	Spic	Shel	W	Shel	½Fl	7.8	31.2	Woh	34x3½	34x5	Bim	.....	4100	134
*International 31	1850	Own	3½x5¼	19.6	L	C	Own	Fin	FS	Ens	G	Own	Own	DP	Bos	Own	Own	A	3	Own	.....	I	Own	D	8	26.5	Own	.....	.....	Own	.....	3190	128
*Kalamazoo GI	1800	Cont N	3¾x5	22.5	L	C	GO	C	FS	Strm	V	Pier	Full	D	Eis	Dy	Full	A	4	B.B.	Shel	W	Wis	½Fl	8.5	40.8	Ros	34x4	34x5	Bim	.....	4450	144
*Kalamazoo LG	2645	Wis SU	4 x5	25.6	L	P	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Ful	A	4	B.B.	Shel	W	Shel	½Fl	8.6	40.8	Ros	36x4	36x7	Smi	.....	5130	144
Kelly-Springfield K31	2700	Own	3¾x5¼	22.5	L	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	3	Own	Per	C	Own	D	8.6	31.58	Gem	36x3½	36x6	StM	.....	4420	Op
Kelly-Springfield K34	2700	Own	3¾x5¼	22.5	L	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A	3	Spic	Per	W	Own	½Fl	8.6	31.58	Gem	36x3½	36x6	StM	.....	4670	Op
Kissel General Utility	1975	Own 40000	3 7/16x5½	24.1	L	C	McC	PT	S	Strm	G	Pier	W-Gr	DP	Eis	.....	W-Gr	U	3	Spic	Mat	W	Shel	½Fl	7.8	28.5	Jac	36x3½	36x5	Pru	.....	4100	152
Kleiber A	.....	Cont K4	4 1/16x5¼	27.2	L	C	Per	C	FS	Strm	G	Sim	.....	DD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	½Fl	7.1	37.51	Ros	36x3½	36x6	Smi	.....	5200	143
Koehler D	1995	H-Sp	3½x5	19.6	L	T	Own	PT	F	Zen	G	Sim	B-Li	D	Spl	.....	.....	U	3	.....	Math	W	Dun	½Fl	7.25	.....	Lav	34x3½	34x5	Way	.....	3600	137
Larrabee U	2400	Cont N¾	3¾x5	22.5	L	C	Bus	Fin	S	Sheb	G	Sim	B-Li	DD	Bos	.....	B-Li	U	3	.....	Mer	W	Shel	½Fl	7.6	25.5	Ros	34x3½	34x5	Hoo	.....	3600	138
Luedinghaus W	2490	Wau BUX	3¾x5¼	22.5	L	G	Own	Pit	FS	Sheb	G	Wau	B.B.	D	Spl	.....	Det	U	3	Spic	Tut	W	Wis	½Fl	8.6	26.6	Lav	34x3½	34x5	StM	.....	4100	144
Maccar L	.....	Cont C4	4 1/16x5¼	27.2	L	C	Own	Fin	FS	Strm	G	Mue	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Mer	W	Timk	½Fl	8.75	46.81	Ros	36x4	36x6	Day	Fir	4800	150
Mack AB1½	3000	Own AB	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	C	Own	D	6.9	28.01	Own	36x4	36x3½†	.....	.....	5000	Op
Mack AB1½	3450	Own AB	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	R	Own	Flot	7.6	30.40	Own	36x4	36x3½†	.....	.....	5100	Op
Master JW	2290	Buda OU	4 1/16x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Timk	½Fl	Opt	Opt	Ros	34x3½	34x5	Pru	.....	3900	142
Master JW	2365	Buda OU	4 1/16x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Timk	½Fl	Opt	Opt	Ros	34x3½	34x5	Pru	.....	3900	160
Master JWL	2590	Buda OU	4 1/16x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Walk	Flot	Opt	Opt	Ros	34x3½	34x5	Walk	.....	3900	142
Master JD	2665	Buda OU	4 1/16x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Walk	Flot	Opt	Opt	Ros	34x3½	34x5	Walk	.....	3900	160
Master JDL	.....	Own	3 9/16x4½	21.	L	T	Own	PT	FS	Eag	G	.....	Own	C	AtK	.....	Own	U	3	Own	.....	W	Own	½Fl	7.25	34.4	Own	35x5	35x5	Kel	Fir	2385	124
Maxwell	2475	Wis EAU	4 x5	25.6	L	T	Own	Fin	FS	Strm	G	Mon	Det	DP	Eis	Opt	Cott	U	3	Spic	Tut	W	Wis	½F	8.25	30.36	Ros	36x3½	36x5	Stn	Fir	4220	144
Menominee H	1695	Own NT	3½x5	19.6	H	C	Mod	C	F	Till	G	Phar	.....	DD	Spl	.....	Own	U	3	Arv	Math	I	Torb	D	8	38	Ros	34x5*	36x6*	.....	Fir	.....	130
Moline 10	2800	Cont K4	4 1/16x5¼	27.2	L	T	Own	C	F	Mas	P	.....	Own	DD	Spl	.....	Own	A	4	Ther	US	W	Timk	½Fl	7	33.88	Ros	36x3½	36x7	Smi	.....	4975	126
Moreland EX	1860	Viet T	3½x5	19.6	H	C	Own	PT	F	Scoe	G	.....	Full	D	Bos	Bos	Full	U	3	Bld	Math	I	Keno	D	8	24	Lav	35x5*	36x6*	Roy	Fir	3450	133
Napoleon 11	.....	Cont K4	4 1/16x5¼	27.2	L	C	Chic	Fin	F	Strm	G	Phar	B-Li	DD	Bos	W	B-Li	U	3	Own	Tut	W	Timk	½Fl	7	.....	Lav	36x3½	36x6	Pru	Gdy	3400	Op
Nelson-LeMoon G2	.....	Buda CTU	3¾x5¼	22.5	L	C	Chic	Fin	F	Strm	G	Pier	Full	DD	Eis	W	Full	U	3	M-E	Tut	W	Shel	½Fl	8.7	31.1	Lav	36x3½	36x5	Bim	Fir	4680	156
Noble B30	1925	Lyco K	3½x5	19.6	L	T	Stan	C	FS	Zen	V	.....	B.B.	D	Del	Dy	G-Le	U	3	UM	SPar	W	Shel	¾Fl	7.75	.....	CAS	34x3½	34x5	E&O	Fir	3200	143
Norwalk	2285	Buda CTU	3¾x5¼	22.5	L	T	Stan	C	FS	Zen	V	.....	B.B.	D	Del	Dy	G-Le	U	3	Spic	Stan	W	Shel	¾Fl	7.2	.....	Det	34x4*	34x5	E&O	Fir	3450	150
Norwalk 35 E Special	.....	Cont N	3¾x5	22.5	L	T	Chic	Fin	FS	Strm	G	Pier	B-Li	DD	Spl	.....	B-Li	U	3	M-E	Tut	W	Timk	½Fl	8.75	.....	Ros	36x3½	36x5	Stn	.....	3400	136
Ogden D1½	2450	Buda ITU	4 x5½	25.6	L	C	R-T	PT	FS	Zen	V	Pier	Full	DD	Eis	.....	Full	U	3	Hart	Cham	W	Wis	½Fl	8.25	24.8	Ros	36x3½	36x5	Bim	.....	4310	146
O. K .1½T	2350	WisEU	4 x5	25.6	L	C	Chic	PT	F	Strm	V	Mon	Full	DD	Bos	Op	Full	U	3	Spic	Shel	W	Shel	½Fl	7.7	24.94	Ros	34x3½	36x6	StM	.....	4150	138
Old Reliable A	1950	HinHAA400	4 x5¼	25.6	L	C	Own	Fin	F	Strm	V	Hink	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Per	W	Timk	½Fl	7.7	37.51	Ros	34x3½	34x5	Own	Fir	4000	140
Paige 52-19	3000	Own	3 5/16x5	21.2	T	C	GO	Fin	F	Strm	V	.....	B-Li	DP	Bos	.....	B-Li	U	4	Spic	C	W	Own	.....	8.75	46.8	Ros	36x4	36x7	Smi	.....	5000	152
Pittsburgher A	3150	Hink	4 x5¼	25.6	L	G	GO	PT	F	Zen	V	Hin	full	DD	Eis	W	Full	U	4	Arv	Row	W	Vul	F	7.75	37.2	Ros	36x6*	40x8*	StM	Fir	5300	150
Power F	2350	Lyc-K	3½x5	19.6	L	T	.....	C	S	Zen	V	.....	BB	.....	Del	Dyn	G-L	U	3	Spic	Shel	W	Timk	½Fl	7	.....	Dit	36x6	36x6	.....	Fir	4200	130
Premocar	2490	Cont J-4	3¾x5	22.5	L	T	EM	Fin	FS	Zen	V	Pier	B-Li	DP	Eis	.....	B-Li	U	3	Hart	Per	W	Shel	.....	7.8	.....	Lav	34x3½	34x5	.....	Fir	3600	147
Rainier R16	2400	Buda ITU	4 x5½	25.6	L	C	Bus	PT	FS	Strm	G	Pier	Full	DD	Eis	.....	Full	U	3	Pet	Shel	P	Badg	D	6.6	26.4	Ros	36x3½	36x5	Bim	Gdy	4500	150
Reliance 10A	1795	Cont N3¾	3¾x5	22.5	L	T	Own	C	FS	Strm	G	.....	Full	DD	Bos	.....	Full	U	3	Hart	Math	I	Torb	D	8	18.84	Jac	34x4	34x6	Nor	Fir	3656	144
Republic 11X	3000	Wis CAU	3¾x5	22.5	L	C	Fed	H	F	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	U	4	Spic	Shel	W	Shel	½Fl	6.5	26	Ros	36x6*	36x6*	Hoo	.....	3800	133
Rowe CW1½	1990	Buda CTU	3¾x5¼	22.5	L	C	Mod	ZZT	F	Strm	G	Pier	Full	DD	Ber	.....	Full	U	3	Bld	Mat	W	Shel	½Fl	7.8	31.2	Gem	36x3½	36x5	Mot	Gdy	4100	144
Rumely A	2250	Cont N	3¾x5	22.5	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Timk	½Fl	7	23.31	Lav	34x3½	34x5	Arc	.....	3560	137
Selden Unit 30	.....	Buda R U	3½x5½	19.6	L	T	.....	Fin	FS	Strm	V	.....	Full	DD	Eis	.....	Full	U	3	Arv	Shel	W	Timk	½Fl	7.75	23.25	Ros	34x3½	34x5	Bim	.....	3450	137
Service 220	2450	Cont C4	4 1/16x5¼	27.2	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Timk	½Fl	7.75	31	Ros	34x4	36x6	St.M	.....	4760	146
*Signal H	2590	Cont N	3¾x5	22.5	L	C	R-T	PT	S	Zen	V	Pier	Full	DD	Bos	.....	Full	U	3	.....	Shel	W	Shel	.....	.....	.....	Ros	36x6	38x7	.....	.....	.....	144
*Southern 15	1600	Cont N	3¾x5	22.5	L	C	Lng	Fin	F	Strm	V	.....	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Per	W	Timk	½Fl	7.2	23.97	Ros	34x3½	34x5	.....	Opt	3466	134
*Standard 1K	2885	Ster FU	4x5¾	25.6	L	C	Own	PT	F	Zen	V	Wau	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Mat	W	Timk	½Fl	7	37.45	Ros	36x3½	36x5	Pru	.....	4750	142
Sterling 1½	1990	Cont N¾	3¾x5	22.5	L	C	Own	PT	FS	Zen	G	.....	Full	DD	Eis	.....	Full	U	3	Hart	Det	I	Cl	D	7.6	22.8	Gem	34x3½†	34x5†	Way	Fir	3440	140
Stewart 9	2150	Wau BUX	3¾x5¼	22.5	L	C	Own	Fin	FS	Strm	G	Wau	B-Li	DD	Eis	.....	B-Li	U	3	Ther	Shel	W	Shel	½Fl	7.8	31.2	Lav	36x3½	36x5	Bim	Gdy	3800	140
Stoughton B	2100	Cont C4	4 1/16x5¼	27.2	L	C	Own	Fin	FS	Sheb	G	Pier	Full	DD	Bos	W	Full	U	3	Pet	Kal	W	Shel	½Fl	7.7	23.25	Ros	36x3½	36x5	Smi	.....	3750	135
Tiffin GW	2175	Cont C4	4 1/16x5¼	27.2	L	C	Own	PT	S	Zen	G	.....	Full	DP	Eis	.....	Full	U	3	Bld	Det	W	Timk	½Fl	7.25	29	Ros	35x5*	38x7*	Pru	Fir	4520	142
*Tower J1½	2295	Cont N4	3¾x5	22.5	L	C	Own	C	FS	Cart	G	.....	Covt	DP	Bos	GD	Covt	U	3	Ther	Det	I	Russ	D	6.15	22.5	Own	35x5*	35x5*	Day	Fir	3400	128
Traffic-Speedboy	1595	Buda WU	3¾x5½	22.5	L	C	.....	.....	F	Strm	V	.....	Full	DP	Eis	.....	Full	...	3	Spic	Det	I	Cl	.....	7.25	21.7	Jac	34x3½	34x5	.....	.....	3700	130
Transport 25	2390	Buda WU	3¾x5½	22.5	L	C	GO	Fin	F	Zen	G	Sim	Covt	DD	Spl	.....	Covt	U	3	M-E	Mer	W	Shel	½Fl	7.8	.....	Ros	34x3½	34x6	Sch	.....	4000	140
Traylor B	1995	Wau BUX	3¾x5¼	22.5	L	C	Per	ZZT	FS	Strm	G	Wau	Full	DD	Eis	.....	Full	U	4	UP	Det	I	Cl	D	7.25	21	Gem	34x3½†	34x6	Roy	Fir	3750	144
Triangle A	1950	Buda MU	3¾x5½	21	L	C	Mod	PT	F	King	V	Pier	B.B.	D	Spl	.....	Cott	U	4	UP	Tut	W	Wis	¼Fl	7.25	.....	Lav	36x3½	36x5	Stn	Stn	.....	132
Triumph	3150	Buda ITU	4 x5½	25 6	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	½Fl	6.5	34.7	Ros	36x3½	36x6	Jon	Fir	4500	140
Ultimate A	2445	Buda CTU	3¾x5¼	22.5	L	C	Mod	PT	F	Strm	G	Sim	Full	DD	Eis	Op	Full	U	6	Bld	Shel	I	Cl	D	7.6	30.4	Jac	34x3½	34x5	Pru	Fir	4000	146
United A–1½																																	

Ursus G 40	2500	Buda CTU	3¾x5¼	22.5	L	T	....	PT	F	Strm	V	Pier	Det	D	Spl	....	Cott	U	3	Ther	....	W	Opt	....	....	....	Ros	Opt	Opt	Roy	....	....	Op
U. S.-N.	....	Cont N	3¾x5	22.5	L	C	Lng	Fin	FS	Strm	V	....	Full	DD	Eis	Op	Full	U	3	Opt	Shel	I	Cl	D	7.6	25.3	Lav	36x3½	36x5	Sch	....	3800	144
U. S.-N. C.	....	Cont N	3¾x5	22.5	L	C	Lng	Fin	FS	Strm	V	....	Full	DD	Eis	Opt	Full	U	3	Opt	Shel	I	Cl	D	7.6	25.3	Lav	35x5*	38x7*	Sch	....	3800	144
U. S.-N. P.	....	Cont N	3¾x5	22.5	L	C	Lng	Fin	FS	Strm	V	....	Full	DD	Eis	Opt	Full	U	3	Opt	Shel	W	Shel	½Fl	7.8	25.97	Lav	35x5*	38x7*	Sch	....	3900	144
U. S.-N W	....	Cont N	3¾x5	22.5	L	C	Lng	Fin	FS	Strm	V	....	Full	DD	Eis	Op	Full	U	3	Opt	Shel	W	Shel	½Fl	7.8	25.97	Lav	36x3½	36x5	Sch	....	3900	144
Velie 46	1585	Cont N¾	3¾x5	22.5	L	C	Own	PT	FS	Strm	G	Mon	B.B.	D	Ber	....	Durs	U	3	Arv	Mat	I	Torb	D	8	37.4	Ros	36x3½	36x5	Bim	Gdy	3650	133
White Hickory H	....	Cont N¾	3¾x5	22.5	L	C	Chic	Fin	FS	Strm	V	Sim	Full	DD	Eis	....	Full	U	3	Arv	Shel	W	Timk	½Fl	8.5	25.5	Ros	36x3½	36x5	Bim	Fir	3750	144
Wilcox BB	....	Own	4¼x5	28.9	L	P	....	PT	S	Strm	G	Dup	Own	C	Bos	....	Own	A	4	Own	Shel	R	Walk	½Fl	8.25	39.9	Own	36x4	36x5†	....	....	4600	135
Wilson F.	2270	Own	3¾x5⅛	22.5	L	G	Lng	PT	FS	Mar	G	Pier	B.B.	D	Eis	....	Own	A	4	Ther	Per	W	Timk	½Fl	7.75	24	Ros	36x3½	36x5	....	....	3800	142
Winther 39	....	Wis CAU	3¾x5	22.5	L	P	Brm	PT	F	Strm	G	....	Full	DD	Eis	W	Full	U	3	Pet	Det	I	Cl	D	7	21	Lav	34x3½	34x5	Own	Fir	3700	140
Winther 430	....	Wis CAU	3¾x5	22.5	L	P	Brm	PT	F	Strm	G	....	Full	DD	Eis	W	Full	U	3	Pet	Det	I	Cl	D	9	36	Lav	32x4	32x4	Own	Fir	4100	132
Wisconsin B (Sauk City)	2100	Cont	3¾x5	22.5	L	P	Chic	PT	F	Strm	V	Phar	B-Li	DP	Opt	Bos	B-Li	U	3	Spic	Det	W	Timk	½Fl	8	....	Lav	34x5*	36x6*	Bim	Gdy	4000	132
Wisconsin (Sauk City)	2500	Wau FU	4 x5¾	25.6	L	C	....	PT	F	Strm	V	Wau	B-Li	DD	Bos	Bos	B-Li	U	4	Spic	....	W	Timk	½Fl	7.20	....	Lav	34x5	36x6	....	....	....	136
Witt Will N.	2250	Cont C4	3¾x5¼	22.5	H	G	Mod	Opt	FS	Zen	G	Pier	B-Li	DD	Eis	....	B-Li	U	3	Spic	Del	W	Timk	½Fl	7	30.36	Ros	36x3½	36x4	Aro	....	4000	120
Wolverine J1½	2375	Cont J	3¾x5	22.5	L	G	Lng	Fin	F	Strm	G	Phar	Full	DD	Eis	Bos	Full	U	3	UP	Am	I	Russ	D	8.8	35.2	Gem	34x3½	34x5	Hay	Gdy	3500	140
2 Ton																																	
Acme 40	....	Cont J4	3¾x5	22.5	L	C	GO	Fin	F	Zen	V	Dup	B.B.	DP	Eis	DL	Cott	U	3	Bld	Det	W	Timk	½Fl	8.75	35	Ros	34x3½	34x5	Bim	....	3980	141
Autocar H.	2950	Own 4	4 x5½	25.6	L	C	Own	Fin	S	Strm	G	....	Own	DP	....	....	Own	A	4	....	....	R	Own	Flot	....	....	Own	34x5	36x7	Hoo	....	5200	114
Autocar K.	3075	Own 4	4 x5½	25.6	L	C	Own	Fin	S	Strm	G	....	Own	DP	....	....	Own	A	4	....	....	R	Own	Flot	....	....	Own	34x5	36x7	Hoo	....	5350	138
Available H 2	2750	Her CU3	4 x5⅛	25.6	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	....	B-Li	A	4	M-E	Tut	W	Timk	½Fl	7	36.4	Ros	36x3½	36x6	Sch	....	4400	147
Case TR.	....	Own K	4¼x5¾	28.9	H	C	Mod	C	S	Bent	G	Own	T-D	....	Eis	....	Own	U	3	Spic	Har	I	Torb	D	8	26	Opt	36x6	38x7	....	Fir	4700	144
Clydesdale 42	2475	Cont	3¾x5	22.5	L	T	Own	PT	FS	Zen	G	Own	B-Li	DD	Bos	....	B-Li	U	3	Spic	Stan	W	Timk	½Fl	7	23.3	Ros	36x3½	36x6	....	....	3800	146
Collier 20	....	Cont C4	4⅛x5¼	27.2	T	P	Lng	PT	FS	Zen	V	Pier	Full	DP	Eis	....	Full	U	4	UP	Math	W	Timk	½Fl	8.5	40.8	Ros	36x4	36x7	Bim	Fir	4800	152
Commerce 16	2150	Cont N	3¾x5	22.5	L	T	Lng	Fin	S	Zen	V	....	B-Li	DP	Eis	Bj	B-Li	U	4	Spic	Am	I	Torb	D	7	28.8	Jac	35x5	36x6	Bim	Fir	3360	137
Concord AX	3250	Buda ITU	4 x5½	25.6	L	C	Bus	PT	F	Zen	G	Mon	B-Li	DP	Eis	....	B-Li	U	4	Spic	Per	W	Timk	½Fl	8.75	35	Ros	36x3½	36x5	Arc	Fir	5300	150
Corbitt C-22	2600	Cont C4	4⅛x5¼	27.2	L	C	McC	Fin	FS	Strm	V	Sim	B-Li	DD	Eis	....	B-Li	U	3	Hart	Shel	W	Shel	½Fl	8.66	29.4	Ros	36x3½	36x7	Bim	Fir	5265	148
Day Elder D.	2400	Cont C2	4⅛x5¼	27.2	L	C	Bus	Fin	FS	Zen	G	Mon	Covt	DD	Eis	....	Covt	U	4	Hart	IC	W	Shel	½Fl	8.66	41.17	Gem	36x4	36x7	Jon	Fir	3950	144
Dearborn 48	2590	Buda WU	3¾x5⅛	22.5	L	T	Chic	Fin	FS	Strm	V	....	Full	DP	Bos	....	Full	U	3	Hart	....	W	Wis	½Fl	9.6	28.8	Dit	34x4½*	34x7	....	....	3750	148
Defiance E.	2275	Hig	3¾x5	22.5	L	P	Per	C	FS	Strm	....	....	B.B.	DP	Eis	AL	G-Le	U	3	Arv	Det	I	Torb	D	8	24	Own	35x5*	38x7*	StM	Fir	3500	140
Denby 34	2395	Cont N¾	3¾x5	22.5	L	T	Lng	PT	FS	Strm	G	Mon	Full	DD	Eis	....	Full	U	4	Up	Det	I	Russ	D	8.85	42.5	Ros	36x3½	36x6	Hay	Fir	3950	144
Dependable C.	2350	Buda CTU	3¾x5¼	22.5	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Spl	AL	Full	U	3	Acm	Per	W	Wis	½Fl	8.2	31.5	Ros	34x3½	34x5	Bim	Fir	4120	Op
Dorris K4.	3400	Own	4¼x5½	28.9	H	C	McC	Fin	F	Strm	G	Own	Own	DP	Bos	....	W-Gr	A	4	Spic	Row	W	Timk	Flot	7.75	38.67	Ros	36x4	36x7	Smi	Fir	5150	162
Douglas H	2250	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F	Sheb	V	Pier	Full	DP	Eis	....	Full	U	3	Arv	Own	I	Torb	D	8.50	28.1	Ros	34x4	36x7	Own	Fir	3900	128
Douglas HW-2.	2350	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F	Sheb	V	Pier	Full	DP	Eis	....	Full	U	3	Arv	Own	W	Wis	....	8.75	29.1	....	34x4	36x7	Own	Fir	3950	132
Drake T-60.	2495	H-Sp-11000	3¼x5	25.3	L	C	....	C	FS	Zen	V	Mon	B.B.	....	Ber	Bj	G-Le	U	3	UM	GC	W	Wis	½Fl	Op	....	Woh	35x5*	36x6*	Day	Fir	3600	140
Duplex A.	2775	Hink HAA	4 x5¼	25.6	L	P	Mod	PT	F	Strm	G	....	Covt	DD	Wes	W	Covt	U	3	Pet	Penn	W	Shel	½Fl	6.5	26.1	Ros	35x5*	38x7*	Pru	....	4400	145
Duty 2.	1590	Gr-B	3½x5	19.6	I	T	Own	C	FS	Zen	G	....	Full	DP	Sim	....	Full	U	3	Cli	Det	I	Russ	D	8.4	33.6	Dit	34x3½	34x5	Stn	Fir	3350	140
Eagle 100.	2275	Buda CTU	3¾x5¼	22.5	L	P	Own	C	F	Zen	G	....	Covt	DD	Eis	....	Covt	U	3	M-E	Cham	I	Russ	D	8.8	31.8	Lav	34x4	34x7	Stn	Fir	4100	130
Fageol 1½-2.	3000	Wau-BUX	3¾x5¼	22.5	L	C	Mod	C	F	Zen	V	Wau	Det	DD	Spl	....	Own	U	5	UP	Math	W	Fink	½Fl	5.6	59.5	Ros	34x3½	34x6	Pru	....	4300	136
*Fargo S.	1600	Cont N	3¾x5	22.5	L	T	Own	Fin	S	Rayf	G	....	Full	DP	Bos	....	Full	U	4	Spic	Shel	I	Russ	D	9.5	....	Jac	36x4	36x6	....	....	3900	144
Federal UE.	2425	Cont C4	4⅛x5¼	27.2	L	C	Own	PT	FS	Zen	G	Phar	B.B.	DP	Eis	....	Own	A	4	Spic	Math	W	Timk	Flot	9.25	40.7	Gem	36x4	36x7	Sch	Fir	4800	156
Forschler D.	....	Cont C4	4⅛x5¼	27.2	L	C	E-M	PT	FS	Zen	....	Dup	Full	....	Bos	Op	Full	....	3	Hart	Own	W	Shel	....	....	....	Ros	34x4	36x7	Smi	....	4735	144
Fulton C.	1985	HSp7000	3½x5	19.6	L	T	GO	H	FS	Cart	G	....	Covt	DP	Ber	....	Covt	....	3	UP	....	I	Russ	D	10.2	....	Lav	34x4	34x6	Hoo	....	3300	137
Garford 70 H	2750	Buda HTU	4¼x5½	28.9	L	C	Own	Fin	F	Strm	G	Sim	....	DD	Spl	....	Own	A	4	Spic	Per	W	Timk	Flot	7.75	....	Ros	36x4	36x7	....	....	5300	144
*Gary I	2250	Buda IU	4 x5½	25.6	L	C	Chic	Fin	F	Mas	G	McC	Full	DD	Eis	....	Full	U	3	Bld	Math	W	Timk	Flot	7.25	21.75	Ros	36x3½	36x6	Pru	Gdy	3800	144
G.M.C. K-20.	2550	Own	4 x5½	25.6	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Own	Own	U	3	Own	Det	W	Timk	¾Fl	6	21.9	Own	36x6	36x6	....	....	3815	178
G. M. C. K-41A.	2375	Own	4 x5½	25.6	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	U	7	Own	Det	W	Timk	Flot	7.25	49.1	Own	36x4	36x7	Own	....	5030	146
G.M.C. K-41B	2375	Own	4 x5½	25.6	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	U	7	Own	Det	W	Timk	Flot	7.25	49.1	Own	36x4	36x7	Own	....	5080	158
*Gramm-Pioneer 20	2925	Cont C2	4⅛x5¼	27.2	L	C	Own	Fin	S	Strm	G	Pier	Full	DD	NE	NE	Own	A	4	Own	Per	W	Shel	½Fl	7.7	36.7	Ros	36x4	36x7	Bim	Fir	4910	144
Hal-Fur D	2000	Hin HA-400	4 x5½	25.6	L	C	GO	PT	F	Strm	V	Hin	B.B.	P	Bos	W	B-Li	A	4	Pet	Per	W	Timk	½Fl	5.5	24	Gem	35x5*	36x6	Stu	Fir	3400	Op
*Harvey WOA	2650	Buda ETU	4¼x5½	28.9	L	C	Own	Fin	F	Strm	G	McC	Full	DD	Bos	....	Full	U	3	Spic	Shel	W	Shel	½Fl	7.75	23.2	Ros	34x4	34x7	StM	....	5300	160
Indiana 20	....	Own 38	4⅛x5½	27.2	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	7.7	41.3	Woh	36x4	36x7	Bim	....	5360	150
*International 41	2100	Own	3½x5¼	19.6	L	C	Own	Fin	FS	Ens	G	Own	Own	DP	Bos	Own	Own	A	4	Own	....	I	Own	D	9	....	Own	....	....	Own	....	3525	128
Kearns N2	1650	H-Sp 7000	3½x5	19.6	L	T	Own	H	FS	Zen	V	Pier	B.B.	DD	Ber	Dy	G-Le	U	3	ME	Math	I	Torb	D	8	24	Lav	34x3½	34x6	Way	....	3400	136
Keystone 2.	2175	Buda WU	3¾x5⅛	22.5	L	C	McC	PT	S	Zen	G	Pier	Full	DD	Ber	....	Full	U	3	Spic	Row	I	Russ	D	8.8	26.6	Ros	34x5*	38x7*	Hoo	Gdy	4000	144
Kimball AB.	3675	Wis TAU	4 x6	25.6	L	C	Flex	PT	F	Zen	V	Sim	B-Li	DP	Spl	W	B-Li	A	4	Spic	US	W	Shel	½Fl	6.5	26	Ros	36x3½	36x7	Smi	Fir	4750	Op
Kleiber BB.	....	Cont K4	4⅛x5¼	27.2	L	C	Per	C	FS	Strm	G	Sim	....	WD	Bos	....	B-Li	A	4	Spic	....	W	Timk	Flot	7.75	37.51	Ros	36x4	36x7	Smi	....	5600	153
Lange B.	3350	Cont C4	4⅛x5¼	27.2	L	T	Own	H	S	Strm	G	Pier	M-E	D	Bos	....	Cott	A	3	M&E	Per	C	Own	D	9.22	46.6	Gem	36x4	36x6	Hoo	Opt	5200	148
Luedinghaus K.	2790	Wau RU4R	4¼x5¾	28.9	L	G	Own	PT	FS	Sheb	G	Wau	B.B.	....	Spl	....	Det	U	3	Spic	Tut	W	Wis	½Fl	8.6	26.6	Lav	36x4	36x7	Bim	....	4400	145
Luedinghaus K-LS.	2890	Wau RU4R	4¼x5¾	28.9	L	C	Own	PT	FS	Sheb	G	Wau	B.B.	....	Spl	....	Det	U	3	Spic	Tut	W	Wis	....	8.6	26.6	Lav	36x4	36x7	Bim	....	4500	170
Maccar H-A	....	Cont K-4	4⅛x5¼	27.2	L	C	Own	Fin	F	Zen	G	Mue	B-Li	DD	Eis	....	B-Li	U	4	Spic	Mer	W	Timk	Flot	8.5	45.47	Ros	36x4	36x4†	Day	....	5300	162
Mack AB2.	3300	Own AB	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	....	Own	U	4	Spic	Mer	C	Own	D	6.9	28.01	Own	36x4	36x4†	....	....	5100	Op
Mack AB2.	3750	Own AB	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	....	Own	U	4	Spic	Mer	R	Own	Flot	7.6	30.40	Own	36x4	36x4†	....	....	5200	Op
Master Z.	2290	Buda OU	4⅛x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DP	Eis	....	Full	U	3	Spic	Det	W	Own	Flot	Opt	Opt	Ros	34x3½	34x5	Pru	....	4000	142
Menominee D.	2875	Wis TAU	4 x6	25.6	L	C	Own	Fin	FS	Strm	G	Mon	Det	DP	Eis	Opt	Cott	U	4	Spic	Tut	W	Wis	½Fl	8.6	45.13	Ros	36x4	36x8	Stn	Fir	4870	144
Nash 3018.	2150	Own 4	3¾x5¼	22.5	L	C	....	....	F	Strm	G	Sim	B.B.	DP	Eis	AL	....	A	4	Own	Mat	I	Cl	D	9	39.6	Lav	34x4	34x7	AuW	....	3850	144
Nash Quad 4017.	2750	Buda HU	4¼x5½	28.9	L	C	....	....	F	Strm	G	Sim	B.B.	DP	Eis	....	....	A	4	Spic	Mat	I	Own	D	8.5	42.3	Lav	36x5	36x5	....	....	6250	124
Netco DK.	‡3100	Cont K4	4⅛x5¼	27.2	L	C	E-M	PT	F	Zen	V	....	B-Li	DP	Eis	....	B-Li	A	4	Hart	Per	W	Timk	Flot	7.75	41.46	Ros	36x4	36x7	Aro	Gdy	5200	150
Niles E.	3000	Cont C4	4⅛x5¼	27.2	L	C	Mod	Own	FS	Strm	G	Mon	B.B.	D	Eis	....	Covt	A	3	Bld	IC	W	Timk	Flot	8.5	28	Gem	36x4	36x7	Hoo	Fir	5800	140
Noble C40.	....	Buda ITU	4 x5½	25.6	L	C	Chic	Fin	F	Strm	G	Pier	Full	DP	Eis	W	Full	U	3	M-E	Tut	W	Shel	½Fl	8.7	31.1	Lav	36x4	36x7	Bim	Fir	4900	160
Northway B2.	3300	Own	4 x6	25.6	H	C	GO	C	F	Strm	V	Pier	Full	DP	Wag	Bj	Full	U	4	Spic	Per	W	Shel	½Fl	7.75	37.2	Ros	36x4	36x4†	Cla	Fir	5875	161
*Oneida B.	2825	Hin 400	4 x5¼	25.6	L	C	Mod	C	F	Strm	V	Hin	Full	DD	Apo	....	Full	A	3	Pet	Math	W	Wis	½Fl	8.25	33	Ros	36x3½	36x6	Pru	....	5100	144
Oshkosh AA4.	3400	H-Sp7000	3½x5	19.6	L	T	Own	C	FS	Zen	V	Dup	B-Li	DP	NE	NE	B-Li	U	4	Pet	Tut	B	Own	Flot	8.2	33	Ros	36x6*	36x6*	Bim	Fir	4350	165
Oshkosh A4.	3250	H-Sp7000	3½x5	19.6	L	T	Own	C	FS	Zen	V	Dup	B-Li	DP	NE	NE	B-Li	U	4	Pet	Tut	B	Own	Flot	8.2	33	Ros	36x6*	36x6*	Bim	Fir	4200	130
Packard EC.	3100	Own	4 1/16x5½	28.1	L	C	....	Fin	F	Own	P	Own	Own	DP	Spl	Bj	Own	A	4	Spic	....	W	Own	Flot	7.25	33.3	Own	36x4	36x7	....	....	5050	144
Packard EX.	3500	Own	4 1/16x5½	28.1	L	C	....	Fin	F	Own	P	Own	Own	DP	Spl	Bj	Own	A	4	Spi	....	W	Own	Flot	8	36.7	Own	36x6*	40x8*	....	....	5200	144
*Patriot Lincoln Special	2050	Hin HAA-400	4 x5¼	25.6	L	C	Own	PT	F	Strm	V	....	Cont	DD	Spl	....	Full	A	4	Ther	Mar	W	Dun	½Fl	7.25	34.43	Ros	34x4	34x6	Bim	Gdy	3900	140
Penn.	2700	Buda MU	3⅝x5⅛	21	L	C	GO	PT	FS	Zen	G	....	Full	DP	Bos	Bos	Full	U	3	Spic	Row	W	Wis	½Fl	9.25	37	Full	34x5	38x7	Smi	Gdy	3975	144
Pierce Arrow X5.	3200	Own	4 x5⅛	25.6	T	C	Own	Fin	F	Strm	F	Own	Own	DD	Del	Opt	Own	A	4	....	SP	W	Own	½Fl	9.66	50.2	....	36x4	36x4†	Day	....	6400	150
Pittsburgher A.	3000	Own	3⅝x5	21.2	T	C	GO	Fin	F	Strm	V	....	B-Li	DP	Bos	....	B-Li	U	4	Spic	IC	W	Own	....	8.75	46.8	Ros	36x4	36x7	Smi	....	5000	152
*Rainier R28.	2950	Cont K4	4⅛x5¼	27.2	L	T	EM	Fin	FS	Zen	V	Pier	B-Li	DP	Eis	....	B-Li	A	3	Spic	SP	W	Shel	....	8.7	28.83	Ros	34x4	34x6	....	Fir	3850	156
Ranger TK-22-1½.	2450	Wis CAU	3¾x5	22.5	L	C	Bus	Fin	F	Zen	G	Sim	Full	PT	Spl	....	Full	U	3	UP	Stan	W	Tim	½Fl	9.25	29.97	Dit	36x6*	38x7*	Bim	Fir	3700	136
Rowe CDW2.	3300	Wis EAU	4 x5	25.6	L	C	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	....	B-Li	U	4	Spic	Shel	W	Shel	½Fl	7.7	31	Ros	34x4	36x3½†	Hoo	....	4500	142
Ruggles 40.	1795	Own	4 x5	25.6	L	G	Per	C	F	Strm	G	....	B-Li	DD	Bos	....	B-Li	U	4	Spic	Mat	R	Own	½Fl	7	37.45	Jac	34x5*	34x7	Nor	Fir	4200	148
Schacht.	3200	Buda ETU	4¼x5½	28.9	L	C	Own	PT	F	Sheb	G	Dup	BB	D	Bos	....	Own	A	4	M&E	Nat	W	Own	Flot	8.66	41	Own	36x4	36x7	StM	....	6200	156
Schwartz K.	3000	Buda CTU	3¾x5¼	22.5	L	C	Fed	H	F	Strm	G	Mon	Full	DP	Bos	....	Full	U	3	M-E	Row	W	Shel	½Fl	7.75	37.2	Ros	34x3½	34x7	Sch	Fir	3990	146
Service 31.	....	Buda IU	4 x5½	25.6	L	C	McC	Fin	F	Strm	V	....	B.B.	DP	Eis	....	B-Li	A	4	Spic	Det	W	Timk	½Fl	7.75	37.5	Ros	36x3½	36x6	Bim	....	4850	150
Service 36.	....	Buda HU	4¼x5½	28.9	L	C	McC	Fin	F	Strm	V	....	B.B.	DP	Eis	....	B-Li	A	4	Spic	Shel	W	Timk	½Fl	7	33.8	Ros	35x5*	38x7*	Bim	Fir	4900	150
*Southern 20.	2990	Buda HTU	4¼x5½	28.9	L	C	Own	PT	S	Zen	V	Pier	Full	DD	Bos	....	Full	U	4	....	Shel	W	Shel	....	....	....	Ros	36x4	40x8	....	....	....	150

‡Chassis only.

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			21			22	23		
2 Ton—Con'd																																		
Sterling 2	3085	Ster FU	4x5¾	25.6	L	C	Own	PT	F	Zen	V	Wau	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Mat	W	Timk	Flot	7.7	41.19	Ros	36x4	36x6	Pru	.....	5725	142
Stewart 7	2190	Cont C2	4 1/16x5¼	27.2	L	G	Bus	Fin	FS	Zen	G	Pier	Full	DP	Eis	.....	Full	U	3	Hart	Det	I	Cl	D	9	27	Ros	34x4†	34x7†	Cla	Gdy	4460	156
*Stoughton D	2490	Her CU3	4 x5½	25.6	L	C	Own	Fin	F	Strm	G	Dup	B-Li	DD	Eis	.....	B-Li	U	4	Ther	Shel	W	Shel	½Fl	8.66	35	Ros	36x4	36x7	Bim	Gdy	4600	140
Superior E	2600	Cont C2	4 1/16x5¼	27.2	L	A	Idl	C	F	Strm	V	Pier	Full	DD	Eis	.....	Full	U	3	Arv	Tut	I	Torb	D	9	23.2	Ros	36x4	36x6	Sch	Fir	3600	144
Titan 2	.....	.....	4 x5½	25.6	L	C	BW	PT	F	Strm	G	Sim	B.B.	DD	Eis	.....	Cott	U	4	Pet	Shel	I	Own	D	8	42	Woh	34x4	36x7†	Bim	.....	4400	156
Traffic 4000C	1595	Cont N4	3¾x5	22.5	L	T	Own	C	FS	Cart	G	.....	Covt	DP	Bos	.....	Covt	U	3	Ther	Det	I	Russ	D	7	25.62	Own	34x3½	34x5	Opt	Fir	3175	132
Transport 35	1885	Cont N	3¾x5	22.5	L	T	.....	.....	FS	Strm	G	Dup	Full	DP	Eis	.....	Full	...	4	Hart	Det	I	Cl	.....	7.6	36.4	Jac	36x3½	36x6	.....	.....	4000	140
Traylor C	2850	Buda ITU	4 x5½	25.6	L	P	GO	Fin	F	Zen	G	Pier	Covt	DD	Spl	.....	Covt	U	3	M-E	Mer	W	Shel	½Fl	7.75	.....	Ros	36x4	36x7	Sch	.....	5100	146
Triangle C	2285	Wau BUX	3¾x5¼	22.5	L	C	Per	ZZT	FS	Strm	G	Wau	Full	DD	Eis	.....	Full	U	3	UP	Det	I	Cl	D	9.1	27	Gem	36x4	36x7	Roy	Fir	4200	147
Triumph 2	2550	Buda CTU	3¾x5¼	22.5	L	C	Mod	PT	F	Kng	V	Pier	B.B.	D	Spl	.....	Cott	U	4	UP	Tut	W	Wis	½Fl	7.75	40.3	Lav	36x4	36x7	Stn	Stn	5000	144
Twin City	2750	Buda ITU	4 x5½	25.6	L	C	Spi	H	F	Sheb	V	Sim	Full	D	Bos	.....	Full	U	3	Arv	Math	I	Cl	D	8	32	Ros	36x6	40x8	Bim	Fir	4800	150
Ultimate AJ	3200	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	½Fl	6.5	34.7	Ros	35x5*	38x7*	Jon	Fir	4500	140
Ultimate AJL	3250	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	½Fl	6.5	34.7	Ros	35x5*	38x7*	Jon	Fir	4590	156
Vim 22	3150	Her C2	3¾x5½	22.5	L	P	McC	Fin	F	Zen	G	Dup	B-Li	D	Spl	.....	B-Li	U	4	Spic	Shel	W	Shel	.....	7.75	.....	Gem	36x4	36x6	Smi	.....	4700	142
*Walker-Johnson A	2250	Buda WU	3¾x5½	22.5	L	T	Bus	Fin	F	Zen	V	.....	Full	DD	Eis	.....	Full	U	3	Spic	SP	W	Timk	½Fl	7.75	.....	Ros	34x3½	34x6	Jon	.....	4150	140
Walter N	3750	Own FU	4 x5¾	25.6	L	C	Bus	PT	F	Strm	G	Wau	B-Li	D	Eis	W	B-Li	A	4	Own	.....	...	Own	Flot	7.25	36	Gem	36x4	36x7	.....	.....	5500	144
White 20	3250	Own	3¾x5½	22.5	L	C	.....	C	FS	Own	G	.....	Own	D	.....	.....	Own	A	4	Own	.....	R	Own	½Fl	.....	.....	Own	36x4	36x7	.....	.....	4500	157
Wichita M	2400	Wau BX	3¾x5¼	22.5	L	C	.....	PT	F	Strm	G	Wau	Own	C	Wag	.....	B-Li	A	4	Own	Det	W	Shel	½Fl	8.6	45.03	Ros	36x3½	36x6	Bim	Fir	4400	144
Wisconsin (Loganville)	1450	HSp 7000	3½x5	19.6	L	T	.....	.....	FS	Strm	V	.....	B.B.	WP	Bos	Dy	Det	U	3	UP	Har	I	Torb	D	8	.....	Lav	34x5*	36x6*	.....	.....	3200	136
Witt Will P	2750	Cont C4	4 1/16x5¼	27.2	H	G	Mod	Opt	FS	Zen	G	Pier	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Del	W	Tim	Flot	7.75	.....	Ros	36x3½	36x7	Arc	.....	5000	144
Wolverine J2	2640	Cont J4	3¾x5	22.5	L	G	Lng	Fin	F	Strm	G	Phar	Full	DD	Eis	Bos	Full	U	3	UP	Am	I	Russ	D	8.8	35.2	Gem	34x4	34x7	Hay	Gdy	4300	148
2½ Ton																																		
Acason H	.....	Wau CU	4¾x5¾	30.6	L	P	Can	C	FS	Sheb	V	Wau	Det	.....	Eis	.....	Cott	A	4	Bld	Det	W	Timk	Flot	7.75	40.3	Ros	36x4	36x8	Sch	Opt	5400	150
Ace 2½	.....	Buda HU	4¼x5½	28.9	L	C	Mod	ZZT	F	Zen	V	Pier	Full	DP	Eis	W	Full	A	4	UM	Math	W	Timk	Flot	8.50	34	Ros	36x4	36.7	Day	Fir	5630	156
*Acme 60	.....	Cont K4	4 1/16x5¼	27.2	L	C	GO	Fin	F	Rayf	V	Dup	B.B.	DP	Eis	DJ.	Cott	U	4	Bld	Det	W	Timk	Flot	9.25	48.10	Ros	36x4	36x7	Bim	.....	4830	148
American	3350	Wis	4 x6	25.6	L	G	GO	Fin	F	Strm	G	Own	Det	D	Apo	.....	Cott	U	4	Acm	SP	W	Thom	Flot	8.33	.....	Ros	36x4	34x4†	.....	.....	5000	158
Apex E	2695	Buda HU	4¼x5½	28.9	L	C	GO	C	F	Strm	V	Dup	Full	D	Eis	Op	Full	U	3	Bld	Det	I	Torb	D	9	27	Lav	36x4	36x7	Roy	Fir	4500	150
*Armleder HWB	3200	Buda HTU	4¼x5½	28.9	L	P	Lng	Fin	F	Zen	G	Phar	B-Li	DD	Bos	W	B-Li	U	4	Spic	Math	W	Timk	Flot	9.25	49.5	Ros	36x4	36x7	StM	.....	4900	148
*Armleder HWC	3200	Cont C4	4 1/16x5¼	27.2	L	P	Lng	Fin	S	Zen	G	Phar	B-Li	DD	Bos	W	B-Li	U	4	Spic	Math	W	Timk	Flot	9.25	49.5	Ros	36x4	36x7	StM	.....	4900	148
Atco A	.....	Bud HU	4¼x5½	28.9	L	C	Chic	PT	F	Strm	G	Pier	Full	D	Eis	.....	Full	A	4	Hart	Shel	W	Wis	.....	8.7	41.6	Ros	36x4	36x7	Smi	.....	4900	150
Atterbury 7CX LWB	3275	Cont C4	4 1/16x5¼	27.2	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	9.25	44.77	Gem	36x4	36x4†	Arc	Fir	5520	171
Atterbury 7CX STD	3175	Cont C4	4 1/16x5¼	27.2	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	9.25	44.77	Gem	36x4	36x4†	Arc	Fir	5360	153
Available 2½	3160	Her CU3	4 x5½	25.6	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A	4	M-E	Tut	W	Timk	Flot	7.75	40.3	Ros	36x4	36x8	Sch	.....	4750	152
Bell O	2550	Buda	4¼x5½	28.9	L	C	Chic	PT	F	Strm	V	Dup	B.B.	DP	Eis	.....	Det	U	3	UP	Det	I	Russ	D	8	38.4	Gem	34x4	34x7	Bim	Fir	4200	146
Bessemer J2	.....	Cont C2	4 1/16x5¼	27.2	L	G	Std	C	FS	Strm	G	Pier	B.B.	DP	Bos	.....	B-Li	A	4	Arv	Per	R	LM	½Fl	.....	.....	Ros	36x4	36x4†	Sch	Fir	4800	158
Bridgeport 2½B	2990	Buda HTU	4¼x5½	28.9	L	G	Own	Fin	FS	Strm	G	Pier	B.B.	D	Eis	.....	B-Li	U	4	Hart	Per	W	Timk	Flot	8.25	.....	Ros	36x4	36x4†	Jon	Fir	5500	156
Brinton D	2975	Cont C4	4 1/16x5¼	27.2	L	C	Chic	PT	F	Strm	G	Pier	B-Li	D	Bos	.....	B-Li	U	3	Spic	Tut	W	Timk	Flot	.....	33.6	Ros	36x4	36x6	Smi	.....	4900	150
Brockway K5	.....	Cont K4	4 1/16x5¼	27.2	L	C	Bus	Fin	F	Strm	V	Phar	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Timk	Flot	7.75	41.5	Gem	36x4	36x8	Hoo	.....	5260	153
Capitol H 2½	3700	WisUAU	4¼x6	28.9	L	C	GO	Fin		Strm	G	Sim	Det	DD	Bos	.....	Cott	U	4	Spic	Sp	W	Wis	½Fl	8.66	45	Ros	36x4	36x8	.....	.....	5200	156
Capitol K2½	4250	Wis UAU	4¼x6	28.9	L	C	GO	Fin	F	Strm	G	Sim	Det	DD	Bos	W	Cott	U	4	Spic	SP	W	Wis	½Fl	7.25	37.7	Ros	36x6*	42x9*	.....	Fir	5100	156
Chicago C2½	.....	Her CU3	4 x5½	25.6	L	C	Brm	PT	F	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	U	4	Pet	Math	W	Timk	Flot	7.75	34	Gem	36x4	36x7†	Opt	Stn	5200	156
Clydesdale 65EX	3450	Cont	4½x5½	32.4	L	C	Own	PT	FS	Zen	G	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Timk	Flot	8.5	41.1	Ross	36x4	36x4†	Smi	.....	5400	163
Clydesdale 65 X	3250	Cont	4¼x5½	27.2	L	C	Own	PT	FS	Zen	G	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Timk	Flot	8.5	41.1	Ros	36x4	36x4†	Smi	.....	5140	163
Collier 22	.....	Cont C4	4 1/16x5¼	27.2	T	P	Lng	PT	FS	Zen	V	Pier	Full	DP	Eis	.....	Full	U	4	UP	Math	W	Timk	Flot	8.5	40.8	Ros	36x4	36x4†	Bim	Fir	5445	165
Commerce 18	2495	Cont C	4 1/16x5¼	26.2	L	P	Lng	Fin	S	Zen	V	.....	B&B	DP	Eis	Bj	B-Li	U	4	Spic	Am	I	Torb	D	7	28.8	.....	36x6	40x8	.....	Fir	4150	149
Concord B	3600	Buda HTU	4¼x5½	28.9	L	C	Bus	PT	F	Zen	G	Mon	B-Li	DP	Eis	.....	B-Li	U	4	Spic	Per	W	Timk	Flot	9.25	37	Ros	36x4	36x8	Arc	Fir	5450	150
Corbitt B–22	3000	Cont C4	4 1/16x5¼	27.2	L	C	McC	Fin	FS	Strm	V	Sim	B-Li	DD	Eis	.....	B-Li	U	4	Hart	Shel	W	Shel	½Fl	8.75	35	Ros	36x4	36x7	Bim	Fir	5325	152
Dart M	.....	Buda HU	4¼x5½	28.9	L	C	Own	C	F	Zen	G	Pier	Full	DD	Eis	.....	Full	U	4	Spic	Per	W	Own	.....	8.5	40.8	Ros	36x4	36x7	Pru	.....	4800	150
Day Elder C	2750	Buda HTU	4¼x5½	28.9	L	C	Bus	Fin	F	Zen	G	Mon	Covt	DD	Eis	.....	Covt	U	4	Hart	IC	W	Shel	½Fl	8.75	41.56	Gem	36x4	36x7	Jon	Fir	4600	150
Dependable D	2650	Buda ITU	4 x5½	25.6	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Spl	AL	Full	U	3	Acm	Per	W	Wis	½Fl	8.5	35.75	Ros	36x4	36x7	Bim	Fir	5300	144
Diamond T–U	2650	Hin	4 x5¼	25.6	L	C	GO	Fin	F	Strm	V	Own	Covt	DD	Bos	.....	Covt	U	4	Spic	Math	W	Timk	Flot	7.8	36.81	Gem	36x4	36x7	.....	.....	4800	160
D-Olt C	3250	Midwest	4 1/16x5¼	27.2	H	C	G-O	PT	F	Zen	G	Dup	B-Li	DD	Bos	.....	B-Li	U	3	Spic	SP	W	Timk	.....	8.5	.....	Ros	36x5	36x4†	.....	.....	5350	168
Erie A2½	.....	Buda ETU	4¼x5½	28.9	L	C	Fed	C	FS	Zen	G	Dup	Full	D	Bos	.....	Full	A	4	Spic	Per	W	Shel	½Fl	8.7	41.7	Ros	36x4	36x4†	Bim	Fir	5760	150
Facto	2295	Buda ETU	4¼x5½	28.9	L	C	Bus	PT	FS	Zen	V	Pier	Full	D	Spl	.....	Full	A	4	Spic	SP	W	Timk	Flot	7.75	33.9	Ros	36x4	36x8	Smi	Fir	5800	155
Gary J	2650	Buda HTU	4¼x5½	28.9	L	C	Chic	Fin	FS	Mas	G	McC	Full	DD	Eis	.....	Full	U	4	Spic	Math	W	Timk	Flot	8.5	41	Ros	36x4	36x8	Pru	Gdy	4850	148
Gersix K	3500	Buda HTU	4¼x5½	28.9	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	U	3	Bld	Tut	W	Own	.....	9.6	39	Ros	36x4	36x8	Jon	.....	5270	150
Giant 16	3150	Cont C4	4 1/16x5¼	27.2	L	P	Own	.....	FS	Sheb	G	Mon	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Timk	Flot	8.8	29.09	Ros	36x4	36x7	Way	.....	4500	168
Giant 16	3050	Cont C4	4 1/16x5¼	27.2	L	P	Own	.....	FS	Sheb	G	Mon	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Timk	Flot	8.8	29.9	Ros	36x4	36x7	Way	.....	4500	144
Hall 2½ Worm	.....	Cont C4	4 1/16x5¼	27.2	L	P	Own	H	FS	Zen	G	Dup	B-Li	DP	Bos	.....	B-Li	U	3	Opt	Det	W	Timk	Flot	7.7	.....	Gem	36x4	36x4	Smi	.....	4525	156
*Harvey WFA	2950	Buda ETU	4¼x5½	28.9	L	C	Own	Fin	F	Strm	G	McC	Full	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	7.75	37.5	Ros	36x4	36x7	StM	.....	5600	160
Hendrickson N	2690	Buda ETU	4¼x5½	28.9	L	C	Chic	PT	F	Strm	G	McC	Full	D	Spl	.....	Full	A	4	Ther	Tut	W	Timk	Flot	7.7	37.2	Ros	36x4	36x7	Stn	.....	.....	Op
H. R. L., H.	3650	Hink HAA	4 x5¼	25.6	L	C	Fed	Fin	F	Zen	V	Hink	B-Li	DP	Bos	GD	B-Li	U	4	Spic	Shel	W	Shel	.....	8.75	30.	Ros	36x4	36x4†	Sch	Gdy	5310	154
Hurlburt 2½	.....	Buda HU	4¼x5½	28.9	L	G	Own	.....	F	Flch	G	Dup	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Own	.....	.....	.....	Ros	36x4	36x4	Way	.....	5600	170
*Huron-Michigan	2790	Buda ETU	4¼x5½	28.9	L	C	.....	Fin	F	Zen	V	Pier	B.B.	D	Bos	.....	Cott	U	4	Det	Det	I	Cl	D	8	41.6	Jac	36x6*	40x8*	AuW	Fir	.....	156
Independent HI (Iowa)	2940	Cont C4	4 1/16x5¼	27.2	L	C	GC	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	4	Bld	GC	I	Russ	D	10	.....	Lav	36x4	36x7	StM	Fir	4953	156
Independent H (Ohio)	3085	Cont K4	4 1/16x5¼	27.2	L	C	Lng	PT	F	Strm	G	.....	Full	DP	Eis	.....	Full	A	4	Spic	Math	W	Wis	.....	9.6	39	Ros	36x4	36x8†	.....	.....	4600	148
Indiana 25	.....	Own 38	4 1/16x5½	27.2	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	7.75	41.3	Woh	36x4	36x8	Day	.....	5850	156
*Kalamazoo HD	3350	Wis UAU	4¼x6	28.9	L	P	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	B.B.	Shel	W	Shel	½Fl	9.5	57	Ros	36x5	36x10	Smi	.....	6720	144
*Kalamazoo NH	3145	Wis TAU	4 x6	25.6	L	P	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	B.B.	Shel	W	Shel	½Fl	8.75	42.8	Ros	36x5	36x10	Smi	.....	6400	...
Kelly Springfield K35	2900	Own	3¾x5¼	22.5	L	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	3	Own	Per	C	Own	D	10.6	35.11	Gem	36x4	36x4†	StM	.....	5000	Op
*Kelly Springfield K38	2900	Own	3¾x5¼	22.5	L	C	Lng	Fin	F	Zen	G	Pier	B&B	D	Eis	W	Covt	A	4	Spic	Per	W	Own	½Fl	10.3	34.2	Gem	36x4	36x4†	StM	.....	5200	Op
*Kimball AC	3975	Wis UAU	4¼x6	28.9	L	C	Flex	PT	F	Zen	V	Sim	B-Li	DP	Spl	W	B-Li	A	4	Spic	US	W	Shel	½Fl	7.75	37.31	Ros	36x4	36x8	Smi	Fir	5000	Op
Kissel Freighter	2875	Own 50000*	4¼x5½	28.9	L	C	McC	PT	S	Strm	V	Pier	W-Gr	DP	Eis	.....	W-Gr	A	4	Spic	Mat	W	Timk	Flot	8.5	42.5	Jac	36x4	36x7	Pru	.....	5100	168

Kleiber B.	.....	Cont L4	4½x5½	32.4	L	C	RT	PT	FS	Strm	G	Sim	.....	DD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	Flot	7.75	37.51	Ros	36x5	36x8	Sm	.....	6000	160
Koehler M.	3175	Her	4 x5⅛	25.6	L	G	Own	PT	F	Zen	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	9.25	37	Lav	36x4	36x7	Way	.....	5050	162
Koehler MCS	3275	Her	4 x5⅛	25.6	L	G	Own	PT	F	Zen	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	.....	Math	W	Timk	Flot	9.25	37	Lav	36x4	36x7	Way	.....	5000	150
Lange E	3450	Cont K4	4⅛x5¼	27.2	L	C	Own	H	F	Strm	V	.....	B-Li	DP	Bos	.....	B-Li	A	4	Spic	SP	W	Timk	Flot	9.25	49.5	Ros	36x4	36x7	Hos	Opt	5600	153
*Larrabee K.	3100	Cont C4	4⅛x5¼	27.2	L	C	Bus	Fin	S	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Opt	Mer	W	Shel	½Fl	8.7	35	Ros	36x4	36x7	Hoo	.....	5700	176
Mack AB 2½	3400	Own A B	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	C	Own	D	6.99	28.01	Own	36x4	36x4†	.....	.....	5200	Op
Mack AB 2.½	3850	Own A B	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	R	Own	Flot	9.25	37.10	Own	36x4	36x4†	.....	.....	5300	Op
Master DD	3190	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	34x4	36x7	Wal	.....	4500	144
Master DDL	3290	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	34x4	36x7	Wal	.....	4600	170
Master W	2890	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	W	Timk	Flot	Opt	Opt	Ros	34x4	36x7	Pru	.....	4500	144
Master WL	2990	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	W	Timk	Flot	Opt	Opt	Ros	34x4	36x7	Pru	.....	4600	170
Moreland AX	3500	Cont L4	4½x5½	32.4	L	C	Own	C	F	Mas	P	.....	Own	DD	Spl	.....	Own	A	5	Ther	US	W	Timk	Flot	6.8	40.94	Ros	36x5	36x10	Smi	.....	5800	160
Nelson & LeMoon G3	.....	Cont K4	4⅛x5¼	27.2	L	C	Chic	Fin	F	Strm	G	Phar	B-Li	DD	Bos	W	B-Li	U	3	Own	Tut	W	Timk	Flot	7.7	......	Lav	36x4	36x7	Pru	Gdy	4100	Op
Netco HL	‡3500	Cont L-4	4½x5½	32.4	L	C	E-M	PT	F	Zen	V	.....	B-Li	DP	Eis	.....	B-Li	A	4	Eas	Math	W	Timk	Flot	7.75	41.46	Gem	36x4	36x8	Arc	Gdy	5750	168
Noble D50	.....	Buda HTU	4¼x5½	28.9	L	C	Chic	Fin	F	Strm	G	Pier	Full	DP	Eis	W	Full	A	4	M-E	Tut	W	Shel	½Fl	8.7	42	Lav	36x4	36x8	Bim	Fir	5700	176
Ogden E2½	.....	Cont C 2	4⅛x5¼	27.2	L	C	Chic	Fin	FS	Strm	G	Pier	B-Li	DD	Spl	.....	B-Li	A	4	M-E	Tut	W	Shel	½Fl	8.7	......	Ros	36x4	36x8	Stn	.....	5600	160
O. K. 2½ T.	3250	Buda HTU	4¼x5½	28.9	L	G	RT	PT	FS	Zen	V	Pier	Full	DD	Eis	.....	Full	U	4	Hart	Cham	W	Wis	½Fl	9.66	41.5	Ros	36x4	36x8	Bim	.....	5350	150
Old Reliable B.	3500	Wis UAU	4¼x6	28.9	L	C	Chic	PT	F	Strm	V	Mon	Full	DD	Bos	.....	Full	A	4	Pet	Shel	W	Shel	½Fl	7.25	42	Ros	34x4	36x4†	StM	.....	5850	160
Olympic J.	3200	Buda HTU	4¼x5½	28.9	L	C	Lng	ZZT	F	Zen	V	Pier	B-Li	D	Bos	Opt	B-Li	U	4	Ther	Lig	W	Timk	Flot	7.75	31	Ros	36x4	36x7	StM	Opt	4985	158
Oneida C.	3200	Hin 400	4 x5¼	25.6	L	C	Mod	C	F	Strm	V	Hin	Full	DD	Apo	.....	Full	A	4	Pet	Math	W	Wis	½Fl	8.6	41.6	Ros	36x4	36x7	Pru	.....	5700	160
Oshkosh B	3850	Her CU 3	4 x5⅛	25.6	L	G	Own	PT	F	Strm	V	Dup	B-Li	DP	NE	NE	B-Li	U	4	Pet	Tut	B	Own	Flot	8	43	Ros	38x7	38x7	Roy	Fir	5400	146
Oshkosh BB	4000	Her CU 3	4 x5⅛	25.6	L	G	Own	PT	F	Strm	V	Dup	B-Li	DP	NE	NE	B-Li	U	4	Pet	Tut	B	Own	Flot	11	63	Ros	40x8	40x8	Roy	Fir	5800	165
Paige 54-20	2420	Hin HA500	4¼x5½	28.9	L	C	Own	Fin	F	Strm	V	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Per	W	Shel	½Fl	8.7	42.35	Ros	34x4	34x8	Day	Fir	5200	150
Parker G1.	3200	Wis UAU	4¼x6	28.9	L	C	Own	PT	F	Strm	V	Pier	B-Li	DD	Eis	W	Full	A	4	Bld	Tut	W	Own	Flot	7.75	37.2	Ros	34x4	36x5†	Bim	.....	5400	150
Pittsburgher C	3600	Own	4⅛x5¼	27.2	T	C	GO	Fin	F	Strm	V	.....	B-Li	DP	Bos	.....	B-Li	U	4	Spic	C	W	Own	.....	9.5	50.82	Ros	36x5	36x8	Smi	.....	6150	162
Rainier R-20	3550	Cont K-4	4⅛x5¼	27.2	L	G	EM	Fin	F	Zen	V	Pier	B-Li	DP	.....	.....	B-Li	A	4	Spi	SP	W	Timk	Flot	.....	......	Ros	34x5	34x8	Way	.....	5000	165
Rainier R-20	3650	Cont K-4	4⅛x5¼	27.2	L	G	EM	Fin	F	Zen	V	Pier	B-Li	DP	.....	.....	B-Li	A	4	Spi	SP	W	Timk	Flot	.....	......	Ro	34x5	34x8	Way	.....	5000	178
Reliance 20B	3100	Buda HTU	4¼x5½	28.9	L	C	Bus	PT	FS	Strm	G	Pier	Full	DD	Eis	.....	Cott	A	4	Pet	Shel	P	Badg	D	7.5	39	Ros	36x4	36x4†	Bim	Gdy	5500	156
Republic 19	2195	Cont C2	4⅛x5¼	27.2	L	C	Own	C	FS	Strm	G	Phar	Full	DD	Bos	.....	Full	U	4	Spic	Math	I	Torb	C	8	38.4	Jac	36x4	36x7	Nor	Fir	4281	144
*Sanford W25	.....	Cont C4	4⅛x5¼	27.2	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Per	W	Shel	½Fl	8.7	34.8	Ros	36x4	36x4†	Hoo	Fir	5330	174
Selden Unit 50	3250	Cont C4	4⅛x5¼	27.2	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	.....	B-Li	A	4	Spic	Per	W	Timk	Flot	7.75	37.51	Gem	36x4	36x7	Stn	.....	5400	145
*Selden Unit 31	3350	Cont C4	4⅛x5¼	27.2	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	W	B-Li	U	4	Spic	Per	W	Timk	½Fl	6	32	Ros	34x5	38x7	MM	Opt	4000	147
Service 51	.....	Buda HU	4¼x5½	28.9	L	C	.....	Fin	F	Strm	V	.....	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Shel	W	Timk	Flot	7.75	37.5	Ros	36x4	36x7	Bim	.....	5180	160
Signal J.	2875	Cont C4	4⅛x5¼	27.2	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	9.25	37	Ros	34x4	36x8	StM	.....	5240	150
Signal JL.	2975	Cont C-4	4⅛x5¼	27.2	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	9.25	37	Ros	34x4	36x8	StM	.....	5500	180
Standard 76	2400	Cont C2	4⅛x5¼	27.2	L	C	Lng	Fin	F	Strm	G	Mon	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Per	W	Timk	Flot	8.5	34	Ros	36x4	36x7	.....	.....	4430	140
Sterling 2½	3290	Ster CU	4⅜x5¾	30.6	L	C	Own	PT	F	Zen	V	Wau	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Math	W	Timk	Flot	7.7	41.19	Ros	36x4	36x4†	Pru	.....	5755	156
Stewart 7X	2390	Buda HTU	4¼x5½	29.	L	G	Bus	PT	FF	Zen	G	Pier	Full	DP	Eis	.....	Full	U	4	Hart	Det	I	Cl	D	9.	43.2	Ros	34x4†	34x7†	CL	Fir	4860	156
Super Truck 50	3300	Wis	4 x6	25.6	L	C	Chic	Fin	F	Zen	G	Sim	Full	DD	Bos	.....	Full	U	4	Ther	Shel	W	Shel	½Fl	8.75	42	Lav	36x4	36x8	Bim	.....	5200	156
Tiffin MW	2700	Cont C4	4⅛x5¼	27.2	L	C	Own	Fin	FS	Sheb	G	Pier	Full	DD	Bos	W	Full	U	4	Pet	Kal	W	Shel	.....	8.7	41.7	Ros	36x4	36x3½†	Smi	.....	5125	148
*Tower H2½	2475	Cont C4	4⅛x5¼	27.2	L	C	Own	PT	S	Strm	G	Pier	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Timk	Flot	9.2	37	Ros	36x4	36x7	Pru	Gdy	5230	146
Triangle B	2585	Wau FU	4 x5¾	25.6	L	C	Whee	PT	F	Strm	G	Wau	Full	DD	Eis	.....	Full	U	4	UP	Det	I	Cl	D	9.1	42	Gem	36x4	36x7	Roy	Fir	4900	150
Triumph HB-2½	2900	Buda CTU	3¾x5¼	22.5	L	C	Mod	PT	F	King	V	Pier	B.B.	D	Spl	.....	Cott	U	4	UP	Tut	W	Wis	½Fl	7.75	40.3	Lav	36x4	36x7	Stn	Stn	4900	144
Ultimate B.	3700	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	½Fl	7.75	30.2	Ros	36x4	36x8	Jon	Fir	5340	154
Union F.	3150	Wis TAU	4 x6	25.6	L	G	GO	Fin	F	Sheb	G	Dup	Full	DD	Eis	LN	Full	U	4	UP	Math	I	Russ	D	7.8	37.4	Ros	36x5	36x8	Pru	.....	5800	155
Union FW	3490	Wis TAU	4 x6	25.6	L	G	GO	Fin	F	Sheb	G	Dup	Full	DD	Eis	LN	Full	U	4	UP	Math	R	Walk	.....	7.86	37.7	Ros	36x5	36x8	Pru	.....	5900	155
United B2½	3150	Buda ETU	4¼x5½	28.9	L	C	Mod	.....	F	Strm	G	Sim	Full	DD	Eis	Op	Full	A	4	Spic	Shel	W	Shel	D	8.75	39.12	Lav	36x4	36x7	Pru	.....	4940	151
Ursus V-50	3250	Buda ETU	4¼x5½	28.9	L	C	.....	PT	FS	Strm	...	Pier	B-Li	DP	Spl	.....	B-Li	...	4	Ther	.....	W	Timk	Flot	.....	......	Ros	Opt	Opt	Roy	.....	.....	Op
Vulcan 25.	4500	Wis U A U	4¼x6	28.9	L	C	.....	.....	F	Zen	G	Pier	B-Li	D	Eis	.....	B-Li	...	4	Spic	Shel	W	Shel	½Fl	Op	Op	Ros	36x6*	40x8*	Smi	.....	6200	Op
*Walker-Johnson B.	2750	Buda HU	4¼x5½	28.9	L	G	Bus	PT	F	Zen	G	Pier	B-Li	D	Eis	.....	Opt	A	4	Spic	Per	W	Timk	Flot	8.5	......	Ros	36x4	36x8	Arc	.....	5000	150
Walter M.	3850	Own FU	4 x5¾	25.6	L	C	Bus	PT	F	Strm	G	Wau	B-Li	D	Eis	W	B-Li	A	4	Own	.....	R	Own	.....	7.25	36	Ros	36x4	36x4†	.....	.....	5600	168
Ward LaFrance 2B	2990	.....	4⅜x5¾	30.6	L	C	Own	Fin	F	Strm	G	.....	B-Li	DP	Bos	.....	B-Li	A	4	M-E	Mer	W	Timk	Flot	7.75	41.46	Ros	36x4	36x4†	Hoo	.....	5900	158
White Hickory K.	.....	Cont C2	4⅛x5¼	27.2	L	C	Chi	Fin	FS	Strm	V	Sim	Full	DD	Eis	.....	Full	U	4	M-E	Shel	W	Timk	Flot	8.5	40.8	Lav	36x4	36x7	Bim	Fir	4650	150
Wilcox CC	.....	Own	4¼x5	28.9	L	G	.....	PT	S	Strm	G	Dup	Own	C	Bos	.....	Own	A	4	Own	Shel	R	Walk	½Fl	8.6	42.35	Own	36x4	36x3½†	.....	.....	5000	135
Wilson EA	2825	Own	4 x5⅛	25.6	L	G	Lng	PT	FS	Mar	G	Pier	B.B.	D	Eis	.....	Own	A	4	Ther	Per	W	Timk	Flot	7.7	31	Ros	36x4	36x7	.....	.....	4625	152
Winther 50	.....	Wis TAU	4 x6	25.6	L	G	Brm	PT	F	Mar	V	.....	Full	DD	Eis	W	Full	U	4	Bld	Math	I	Cl	D	9.	......	Ros	38x7*	42x9*	Own	.....	5900	110
*Winther 450	.....	Wis-TAU	4 x6	25.6	L	G	Brm	PT	F	Strm	G	.....	Full	DD	Eis	W	Full	U	3	Pet	Math	I	Cl	D	9	36	Lav	34x4	36x6	Cla	.....	4300	150
Wisconsin (Loganville)	2000	Cont 9N-6	3½x5¼	29.3	L	T	.....	.....	FS	Zen	V	.....	B.B.	NP	Bos	Dy	Det	U	3	UP	Har	I	Torb	D	8.	......	Lav	36x6*	38x7*	.....	.....	4200	140
Wisconsin C (Sauk City)	2700	Wau CU	4 x5¾	25.6	L	C	Chic	PT	F	Strm	V	Wau	B-Li	DD	Eis	Opt	B-Li	A	4	Spic	Det	W	Timk	Flot	8.75	......	Lav	36x6	38x7	Bim	Gdy	6200	136
Wolverine K2½	3425	Cont K	4⅛x5¼	27.2	L	G	Lng	Fin	F	Strm	G	Phar	Full	DD	Eis	Bos	Full	U	4	UP	Am	I	Russ	D	9.4	45	Ros	36x4	36x8	Cla	Gdy	5600	168
3 Ton																																	
Acme 60L	.....	Cont L4	4½x5½	32.4	L	C	Own	Fin	F	Rayf	V	Dup	B.B.	DP	Eis	DL	Cott	U	4	Bld	Det	W	Timk	Flot	6.	31.2	Ros	36x4	36x7	Bim	.....	5050	156
Concord BX	3600	Buda HTU	4¼x5½	28.9	L	C	Bus	PT	F	Zen	G	Mon	B-Li	DP	Eis	.....	B-Li	U	4	Spic	Per	W	Timk	Flot	9.25	37.	Ros	36x4	36x8	Arc	Fir	5550	170
Corbitt R-22	3200	Cont E-4	4½x5½	32.4	L	C	McC	Fin	FS	Strm	V	Sim	B-Li	DD	Eis	.....	B-Li	U	4	Hart	Shel	W	Shel	½Fl	8.75	35	Ros	36x4	36x8	Bim	.....	6160	158
*Denby 35	2795	Cont C2	4 x6	27.2	L	C	Lng	PT	FS	Strm	G	Sim	Full	DD	Eis	.....	Full	A	4	UP	Det	I	Cl	D	8.15	45.3	Ros	36x4	36x7	Smi	Fir	4920	155
Dependable E	2950	Buda HTU	4¼x5½	28.9	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Spl	AL	Full	A	4	Acm	Per	W	Wis	½Fl	8.6	40	Ros	36x4	36x7	Bim	Fir	5800	165
Douglas I 3	2950	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F	Sheb	V	Pier	Full	DP	Eis	.....	Full	U	4	Arv	Own	W	Wis	.....	9.1	41	Ros	36x5	36x8	Own	Fir	4750	136
Fageol 2½–3	3900	Wau CU	4⅜x5¾	30.6	L	C	Mod	C	F	Zen	V	Wau	Det	DD	Spl	.....	Own	A	5	Spic	Math	W	Timk	Flot	5.6	59.5	Ros	36x4	36x7	Stn	.....	4600	144
Forschler E	.....	Cont C4	4⅛x5¼	27.2	L	C	EM	.....	FS	Zen	V	Dup	Full	.....	Bos	.....	Full	...	4	Hart	Own	W	Shel	.....	.....	......	Ros	36x4	36x8	Smi	.....	5200	144
F. W. D., B	4200	Wis A	4¾x5½	36.1	T	C	McC	PT	F	Strm	G	Pier	HS	D	Eis	.....	Cott	A	3	Bld	Tut	B	Own	Flot	8.9	35.6	Ros	36x6	36x6	Sch	.....	6300	124
Gersix L	4500	Buda YTU	4½x6	32.4	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	A	4	Bld	Tut	W	Shel	.....	10.2	53.3	Ros	36x5	40x12	Jon	.....	8050	170
*Gramm-Pioneer 30	3275	Hink HA500	4¼x5½	28.9	L	C	Own	Fin	F	Strm	V	Hink	Own	DD	Eis	NE	Own	A	4	Own	Per	W	Shel	½Fl	7.7	36.7	Ros	36x4	36x4†	Smi	Fir	6640	150
*International 61	2400	Own	4¼x5	28.9	H	T	Own	Fin	FS	Ens	G	Own	Own	DP	Spl	Own	Own	A	4	Own	.....	I	Own	D	9	......	Own	......	......	Own	.....	4500	138
*Kimball AM	4850	Wis VAU	4½x6	32.4	L	C	Flex	PT	F	Zen	V	Sim	B-Li	DP	Spl	W	B-Li	A	4	Pet	US	W	Timk	Flot	8.75	46.8	Ros	36x5	40x7†	Smi	Fir	7850	Op
Maccar H2	.....	Cont L4	4½x5½	32.4	L	C	Own	Fin	F	Strm	G	Mue	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Mer	W	Timk	Flot	8.5	45.47	Ros	36x4	36x5†	Day	Fir	5700	162
Packard ED	4100	Own	4½x5½	32.4	L	C	.....	Fin	F	Own	P	Own	Own	DP	Spl	Bj	Own	A	4	Spic	.....	W	Own	Flot	9.0	41.3	Own	36x5	36x5	.....	.....	7350	156
Patriot Washington Spec.	2900	Hin HA-200	4½x5½	32.4	L	C	Own	PT	F	Strm	V	.....	Cont	DD	Spl	.....	Cont	A	4	Ther	Mar	W	Wis	½Fl	9.67	45.93	Ros	36x4	36x7	Bim	Gdy	5200	156
Pittsburgher C	3600	Own	4⅛x5¼	27.2	T	C	GO	Fin	F	Strm	V	.....	B-Li	DP	Bos	.....	B-Li	U	4	Spic	IC	W	Own	.....	9.5	50.82	Ros	36x5	36x8	Smi	.....	6150	162
Rowe GPW3	5250	H-Sp8 VA	3¼x5	33.8	L	C	Fed	H	F	Zen	V	.....	B-Li	DP	AtK	W	B-Li	U	4	Spic	Shel	W	Shel	½Fl	7.7	31	Ros	38x7*	42x9*	Hos	.....	5500	170
Rowe GSW3	4150	Wis TAU	4 x6	25.6	L	C	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	.....	B-Li	U	4	Spic	Shel	W	Shel	½Fl	7.7	31	Ros	36x5	36x5†	Hos	.....	4800	162
Schacht	3800	Buda ETU	4¼x5½	28.9	L	G	Own	PT	F	Sheb	G	Dup	B.B.	D	Bos	.....	Own	A	4	M-E	Nat	W	Own	Flot	9.66	46	Own	36x5	36x5†	StM	.....	6700	156
Schwartz LS	3600	Buda HTU	4¼x5½	28.9	L	C	Fed	H	F	Strm	G	Mon	Full	DP	Bos	.....	Full	U	4	M-E	Row	W	Shel	½Fl	8.75	42	Ros	36x4	36x8	Sch	Fir	4850	132
Schwartz L	3600	Buda HTU	4¼x5½	28.9	L	C	Fed	H	F	Strm	G	Mon	Full	DP	Bos	.....	Full	U	4	M-E	Row	W	Shel	½Fl	8.75	42	Ros	36x4	36x8	Sch	Fir	4900	150
Schwartz LL	3600	Buda HTU	4¼x5½	28.9	L	C	Fed	H	F	Strm	G	Mon	Full	DP	Bos	.....	Full	U	4	M-E	Row	W	Shel	½Fl	8.75	42	Ros	36x4	36x8	Sch	Fir	4970	168
Service 52	.....	Buda	4¼x5½	28.9	L	C	.....	.....	F	Strm	...	.....	.....	DP	Eis	.....	B-Li	A	3	.....	.....	W	Timk	Flot	.....	......	Ros	36x4	36x8	.....	.....	5180	160
*Stoughton F	3150	Her MU2	4¼x5½	28.9	L	C	Own	Fin	F	Strm	G	Dup	B-Li	DD	Eis	.....	B-Li	U	4	Ther	Shel	W	Shel	½Fl	8.75	35	Ros	36x5	36x5†	Bim	Gdy	5900	158
Traffic 6000	1895	Cont N4	3¾x5	22.5	L	T	Own	C	FS	Cart	G	.....	Covt	DP	Bos	.....	Covt	U	3	Ther	Det	I	Russ	D	8.8	32.2	Own	36x4	36x7	Opt	Fir	3900	135
*Transport 55	2385	Cont C2	4⅛x5¼	27.2	L	C	.....	.....	FS	Strm	G	Dup	Full	DP	Eis	.....	Full	...	4	Hart	Det	I	Cl	.....	8.15	39.19	Jac	36x4	36x8	.....	.....	5000	150

‡ Chassis only.

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
3 Ton—Con'd		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	16	17	18	19	20			21			22	23		
Traylor D.	3300	Buda HTU	4¼x5½	28.9	L	P	GO	Fin	F	Zen	G	Pier	M-E	DD	Spl	.....	Own	...	4	M-E	Mer	W	Shel	½Fl	7.7	.....	Ros	36x4	36x8	Sch	.....	5850	150
Ultimate BL.	3800	Buda HTU	4¼x5½	28.9	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	½Fl	7.75	30.2	Ros	36x4	36x8	Jon	Fir	5590	178
U. S., R.	.....	Own	4 x5¼	25.6	L	C	Lng	Fin	F	Strm	V	Own	B-Li	DD	Eis	Op	B-Li	A	4	Opt	Shel	W	Shel	½Fl	8.7	41.5	Lav	36x4	36x4†	Sch	.....	5500	156
Vim 23	3950	Her M2	4¼x5½	28.9	L	P	McC	Fin	F	Zen	G	Dup	B-Li	D	Spl	.....	B-Li	A	4	Spic	Shel	W	Shel	.....	7.75	.....	Gem	36x5	36x5†	Smi	.....	6370	175
Wichita RX	3200	Wau CU	4⅜x5¾	30.6	L	G	.....	PT	F	Strm	G	Wau	Own	C	Wag	.....	B-Li	A	4	Own	Det	W	Shel	½Fl	8.75	45.5	Ros	36x4	36x8	Smi	Fir	5900	160
Winther 51	.....	Wis TAU	4 x6	25.6	L	P	Brm	PT	F	Mas	V	.....	BB	DP	Eis	W	B-Li	A	4	Bld	Math	I	Cl	D	8	40	Ros	34x4	34x4	Own	.....	5300	150
3½ Ton																																	
Acason L.	.....	Wau CU	4⅜x5¾	30.6	L	G	Can	C	FS	Sheb	V	Wau	Det	.....	Eis	.....	Cott	A	4	Bld	Det	W	Timk	Flot	8.75	48.5	Ros	36x5	36x5†	Smi	Opt	7000	180
Apex F.	3975	Buda YTU	4½x6	32.4	L	C	GO	C	F	Strm	V	Dup	Full	D	Eis	Opt	Full	A	4	Bld	Det	I	Torb	D	10.5	.....	Woh	36x5	36x10	Roy	Fir	6940	168
Armleder KW.	4150	Buda YTU	4½x6	32.4	L	P	Own	Fin	F	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	U	4	Spic	Math	W	Timk	Flot	10.33	55.25	Ros	36x5	36x5†	StM	.....	6900	156
Armleder K W	4150	Cont E4	4½x5½	32.4	L	P	Own	Fin	S	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	U	4	Spic	Math	W	Timk	Flot	10.33	55.25	Ros	36x5	36x5†	StM	.....	6900	156
Atterbury 7D-LWB.	4075	Cont E4	4½x5½	32.4	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	10.3	49.85	Gem	36x5	40x5†	Arc	Fir	7270	192
Atterbury 7D-Standard.	3975	Cont E4	4½x5½	32.4	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	10.3	49.85	Gem	36x5	40x5†	Arc	Fir	6950	167
Autocar Y	3950	Own Y	4½x5½	28.9	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A	4	.....	.....	R	Own	Flot	8.7	52.2	Ros	34x5	36x10	Hoo	.....	7000	120
Autocar B.	4100	Own B	4¼x5½	28.9	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A	4	.....	.....	R	Own	Flot	8.7	52.2	Ros	34x5	36x10	Hoo	.....	7150	156
Available H3½	4175	Her MU3	4½x5½	32.4	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A	4	M-E	Tut	W	Timk	Flot	10.33	49.99	Ros	36x5	40x5†	Sch	.....	6500	176
Bridgeport 4C	3990	Buda YTU	4½x6	32.4	L	G	Own	Fin	FS	Strm	G	Pier	B.B.	D	Eis	.....	B-Li	A	4	Hart	Per	W	Eat	.....	9.25	.....	Ros	36x5	36x10	Jon	Fir	10500	170
Brockway R-4	.....	Cont L4	4½x5½	32.4	L	C	Bus	Fin	F	Strm	V	Phar	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Timk	Flot	8.75	46.8	Gem	36x5	36x5†	Smi	.....	6800	164
Capitol M-3½	4425	Wis UAU	4¼x6	28.9	L	C	GO	Fin	F	Strm	V	Sim	Det	DD	Bos	.....	Cott	U	4	Spic	SP	W	Wis	½Fl	9	46.8	Ros	36x5	36x10	Smi	.....	6400	168
Chicago C3½	.....	Her MU3	4½x5½	32.4	L	C	Brm	PT	FS	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	A	4	Pet	Math	W	Timk	Flot	9.33	50	Gem	36x5	36x10	Opt	Sta	7200	168
Clydesdale 90.	4100	Cont	4½x5½	32.4	L	C	Own	PT	FS	Zen	G	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Timk	Flot	10.33	55.2	Ros	36x5	40x5†	Smi	.....	7600	160
Dart W.	.....	Buda YTU	4½x6	32.4	L	C	Own	C	F	Zen	G	Pier	Full	DD	Eis	.....	Full	A	4	Spic	Per	W	Own	.....	8.7	52.5	Ros	36x5	36x10	Pru	.....	6740	160
Day Elder F.	3150	Cont E4	4½x5½	32.4	L	C	Bus	Fin	FS	Zen	G	Mon	B-Li	DD	Eis	.....	B-Li	U	4	Hart	IC	W	Shel	½Fl	10.25	41	Gem	36x5	36x5†	Jon	Fir	5600	165
Dependable G 3½	3550	Buda YTU	4½x6	32.4	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Spl	AL	Full	A	4	Acm	Per	W	Wis	½-Fl	10	47.61	Ros	36x6	36x10	Bim	Fir	6000	165
Diamond T-K	3750	Hin	4¼x5½	28.9	L	C	GO	Fin	F	Strm	V	Own	Covt	DD	Bos	.....	Covt	A	4	Spic	Math	W	Timk	Flot	8.8	44.36	Gem	36x5	36x5†	.....	.....	7250	170
Dixon.	4070	Cont E4	4½x5½	32.4	L	C	GO	PT	FS	Zen	G	Pier	Full	.....	Apo	.....	Full	U	4	Hart	IC	W	Timk	Flot	Opt	Opt	Ros	36x5	36x10	Smi	.....	6650	160
Dorris K7	4400	Own	4¼x5½	28.9	H	C	McC	Fin	F	Strm	G	Own	Own	DP	Bos	W	W-Gr	A	4	Spic	Row	W	Timk	Flot	10.33	51.5	Ros	36x5	36x10	Smi	.....	6750	194
Duplex E.	3500	Buda TU	4¼x5½	28.9	H	C	Lng	ZZT	FS	Sheb	V	Dup	B-Li	DD	Eis	.....	B-Li	U	4	Pet	Tut	I	Own	D	8	64	Woh	36x8	36x8	Pru	.....	6075	130
Federal WE.	3150	Cont E4	4½x5½	32.4	L	C	Own	Fin	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	Flot	10.33	51.56	Gem	36x5	36x5†	Smi	Fir	6990	156
Garford 77D	3750	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Strm	G	Sim	.....	DD	Spl	.....	Own	A	4	Spic	Per	W	Timk	Flot	8.7	.....	Ros	36x5	36x5†	Smi	.....	7700	162
Gary KT	3650	Buda YTU	4½x6	32.4	L	C	Chic	Fin	F	Mas	G	McC	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	10.33	50	Ros	36x5	40x5	Pru	.....	7000	162
Giant 17	4150	Cont E4	4½x5½	32.4	L	P	Own	.....	B	Strm	G	Mon	.....	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Timk	Flot	10.25	49.61	Ros	36x5	36x5†	Way	.....	6800	176
G. M. C. K-71A	3600	Own	4½x6	32.4	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	A	7	Own	Det	W	Timk	Flot	8.75	75.2	Own	36x5	40x5†	Own	.....	7714	163
G.M.C. K-71B.	3700	Own	4½x6	32.4	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	A	7	Own	Det	W	Timk	Flot	8.75	75.2	Own	36x5	40x5	Own	.....	7820	187
Gramm-Pioneer 75P.	4225	Hink HA200	4½x5½	32.4	L	C	Own	Fin	F	Strm	V	Hink	Own	DD	Eis	NE	Own	A	4	Own	Per	W	Shel	½Fl	9.5	45	Ros	36x6*	42x9*	Smi	.....	6000	150
Hal-Fur B.	3000	Hin HA-500	4¼x5½	28.9	L	G	GO	PT	F	Strm	V	Hin	B.B.	P	Bos	W	Own	A	4	Pet	Per	W	Timk	Flot	7.75	57.4	Gem	36x6	Opt	Smi	Fir	5000	Op
Hal-Fur F.	4000	Hin AA 1600	4½x5½	32.4	H	C	GO	PT	F	Strm	V	Hin	B.B.	DP	Bos	W	Own	A	4	Pet	Mer	W	Timk	Flot	10.33	72	Gem	36x5	40x10	.....	.....	6500	180
Hall 3½ Worm.	.....	Cont E4	4½x5½	32.4	L	T	Own	PT	FS	Zen	G	Dup	B-Li	DP	Bos	.....	B-Li	A	..	Opt	Det	W	Timk	Flot	10	.....	Gem	36x5	36x5†	Smi	.....	6525	144
Harvey WHA	3950	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Strm	G	McC	Full	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	8.75	46.8	Ros	36x5	36x5†	StM	.....	7600	160
Hendrickson M.	3000	Buda ETU	4¼x5½	28.9	L	C	Chic	PT	F	Strm	G	McC	Full	DD	Spl	.....	Full	A	4	Ther	Tut	W	Timk	Flot	10	49.6	Ros	36x5	36x5. . .	Stn	.....	.....	Op
Hurlburt.	.....	Buda YTU	4½x6	32.4	L	G	Own	.....	FS	Flch	G	Dup	B-Li	D	Eis	.....	B-Li	A	4	Spic	Per	W	Own	Flot	8.7	41.91	Ros	36x5	36x5	Way	.....	7400	156
Independent K, (Ohio)	3985	Cont L4	4½x5½	32.4	L	G	Lng	PT	FS	Strm	G	.....	Full	DP	Eis	.....	Full	U	4	Spic	Mat	W	Wis	.....	10	48	Ros	36x5	36x10†	.....	.....	5400	160
Indiana 35.	.....	Own 40	4½x5½	30.6	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	10.2	54.84	Woh	36x5	36x5†	Smi	.....	7050	160
Jackson B.	3850	Cont E4	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	V	Pier	B.B.	DP	Eis	Dy	Own	A	4	Spic	Per	B	Own	Flot	9.2	43.49	Ros	36x7	36x7	.....	.....	7400	150
*Kalamazoo 8K	3845	Wis UAU	4¼x6	28.9	L	P	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	B.B.	Shel	W	Shel	½Fl	10.25	61.5	Ros	36x5	36x12	Smi	.....	7520	160
Kelly-Springfield K-40.	3900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B&B	D	Eis	W	Covt	A	3	Own	Per	C	Own	D	10.49	31.69	Gem	36x5	40x5†	StM	.....	7730	Op
Kelly-Springfield K-41.	3900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A	4	Pet	Per	I	Cl	D	10	50.7	Gem	36x5	36x10	Cla	.....	7900	Op
Kelly-Springfield K-42.	3900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A	4	Pet	Per	W	Eat	½Fl	10.25	51.97	Gem	36x5	40x5†	Smi	.....	8500	Op
Kleiber C.	.....	Cont L4	4½x5½	32.4	L	C	RT	PT	FS	Strm	G	Sim	.....	DD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	Flot	8.75	42.35	Ros	36x5	36x10	Smi	.....	7200	163
Koehler F.	4150	Her	4½x5½	32.4	L	C	Own	PT	F	Zen	G	Pier	B-Li	DD	Spl	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	10.33	.....	Lav	36x5	36x10	Day	.....	7000	162
*Larrabee L4.	4000	Cont L4	4½x5½	32.4	L	C	R-T	Fin	S	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Mer	W	Shel	½Fl	10	53.5	Ros	36x5	36x5†	Smi	.....	7660	186
Mack AC 3½	4950	Own AC	5 x6	40	L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	8.49	27.20	Own	36x5	40x5†	.....	.....	8070	Op
Master A.	3990	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	Opt	Opt	Ros	36x5	40x5†	Smi	.....	8000	158
Master AL.	4090	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	Opt	Opt	Ros	36x5	40x5†	Smi	.....	8200	194
Master E.	4290	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	36x5	40x5†	Wal	.....	8000	158
Master EL.	4390	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	36x5	40x5†	Wal	.....	8200	194
Menominee G.	3800	Wis VAU	4½x6	32.4	L	C	Own	Fin	FS	Strm	G	Mon	Det	DP	Eis	Opt	Cott	A	4	Spic	Tut	W	Timk	Flot	10.3	53.71	Ros	36x5	36x10	Smi	Fir	6750	160
Nelson & LeMoon G 4.	.....	Cont L4	4½x5½	32.4	L	C	Chic	Fin	F	Strm	G	Phar	B-Li	DD	Bos	W	B-Li	U	4	Own	Tut	W	Timk	Flot	8.7	42	Lav	36x5	36x5†	Pru	Gdy	6000	Op
Noble E70	.....	Buda YTU	4½x6	32.4	L	C	Chic	Fin	F	Strm	G	Pier	Full	DP	Eis	W	W-Gr	A	4	M-E	Tut	W	Shel	½Fl	8.7	42	Lav	36x5	36x10	Bim	Fir	7200	182
*Northway B3.	4200	Own	4 x6	25.6	H	C	GO	C	F	Strm	V	Pier	Full	DP	Wag	Bj	Full	U	4	Spic	Per	W	Shel	½Fl	10.25	49.2	Ros	36x5	40x5†	Cla	Fir	7700	Op
Ogden F 3½	.....	Cont L4	4½x5½	32.4	L	P	Chic	Fin	F	Strm	G	Pier	B-Li	DD	Spl	.....	B-Li	A	4	M-E	Tut	W	Timk	Flot	10.33	.....	Ros	36x5	40x10	Stn	.....	7300	178
O.K. 3½ T.	4250	Buda YTU	4½x6	32.4	L	G	RT	PT	FS	Zen	V	Pier	Full	DD	Eis	.....	Full	A	4	Hart	Cham	W	Wis	½Fl	10	60	Ros	36x5*	36x5†	Bim	.....	6350	164
Old Reliable C.	4250	Wis UAU	4¼x6	28.9	L	C	Chic	PT	F	Strm	V	Mon	Full	DD	Bos	.....	Full	A	4	Pet	Shel	W	Shel	½Fl	8.75	52.5	Ros	36x5	36x5†	StM	.....	6650	168
*Oneida D	4050	Hin 200	4½x5½	33.5	L	C	Mod	C	F	Strm	V	Hin	Full	DD	Apo	.....	Full	A	4	Pet	Math	W	Timk	Flot	10.33	49.6	Ros	36x5	36x10	Smi	.....	7700	170
Paige 51-18.	3145	Hin HA 200	4½x5½	32.4	L	C	Own	Fin	F	Strm	V	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Per	W	Timk	Flot	10.3	50.01	Ros	36x5	36x5†	Own	Fir	7000	160
Parker J20	3950	Wis VAU	4½x6	32.4	L	C	Own	PT	F	Strm	V	Pier	B-Li	DD	Eis	W	W-Gr	A	4	Bld	Tut	W	Own	Flot	8.75	43.6	Ros	36x5	40x5†	Smi	.....	6550	160
Pierce Arrow W2	4350	Own	4½x6¾	32.4	T	C	Own	Fin	F	Strm	F	Own	Own	DD	Del	Opt	Own	A	4	.....	SP	W	Own	Flot	8	49	....	36x5	36x5†	Day	.....	8350	162
Pittsburger D	3800	Own	4½x5¼	27.2	T	C	GO	Fin	F	Strm	V	.....	B-Li	DP	Bos	.....	B-Li	U	4	Spic	C	W	Own	.....	9.5	50.82	Ros	36x5	36x10	Smi	.....	6500	162
Power C.	4150	Hink HA	4½x5½	32.4	L	G	GO	PT	F	Zen	V	Hin	Full	DD	Eis	W	Full	A	4	Arv	Row	W	Wis	½Fl	10	48	Ros	36x5	40x10	StM	.....	7400	160
Rainier R-15.	4400	Cont L4	4½x5½	32.4	L	C	EM	PT	FS	Zen	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	SP	W	Tim	Flot	.....	.....	Ros	36x5	36x5†	.....	Fir	.....	170
Republic 20.	3095	Cont E4	4½x5½	32.4	L	C	Own	Fin	FS	Strm	G	Phar	Full	DD	Bos	.....	Full	U	4	Spic	Math	I	Torb	D	10.25	49.25	Jac	36x5	36x10	Smi	Fir	6517	165
Gary KT.	3550	Buda YTU	4½x6	32.4	L	C	Chic	Fin	F	Mas	G	McC	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	10.33	50	Ros	36x5	40x5	Pru	.....	7000	162
Sanford W3h.	.....	Cont E4	4½x5½	32.4	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Per	W	Shel	½Fl	8.7	34.8	Ros	36x5	36x5†	Hoo	Fir	6750	174
Selden Unit 70.	3750	Cont E7	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	.....	B-Li	A	4	Spic	Per	W	Timk	Flot	8.75	42.35	Gem	36x5	36x10	Stn	.....	7200	162

*Selden Unit 51	4350	Cont E4	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	W	B-Li	A	4	Spic	Per	W	Timk	Flot	6	32	Gem	36x6	40x8	Stn	Opt	5650	179
Service 72	.....	Buda HU	4¼x5½	28.9	L	C	McC	Fin	F	Strm	V	.....	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Shel	W	Timk	Flot	8.75	42.35	Ros	36x5	36x5†	Stn	.....	6930	171
Service 77	.....	Buda YU	4½x6	32.4	L	C	McC	Fin	F	Strm	V	.....	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Shel	W	Timk	Flot	7.8	37.75	Ros	36x5	36x5†	Stn	.....	7280	171
Signal M.	3675	Cont E4	4½x5½	32.4	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	12	58.08	Ros	36x5	40x10	StM	.....	7350	168
Signal ML.	3775	Cont E-4	4½x5½	32.4	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	12	58.08	Ros	36x5	40x10	StM	.....	7700	204
Standard 66	3150	Cont E7	4½x5½	32.4	L	C	Lng	Fin	F	Strm	V	Mon	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Per	W	Timk	Flot	10.3	49.8	Gem	36x5	36x12	.....	.....	6480	160
Sterling 3½	4325	Ster DU	4½x6¼	32.4	L	C	Own	PT	F	Zen	V	Wau	H-S	WD	Eis	.....	Own	A	3	Spic	Math	W	Timk	Flot	8.75	39.5	Ros	36x5	40x5†	Pru	.....	8050	162
Stewart 10	3190	Cont E7	4½x5½	32.4	L	G	Bus	PT	FS	Zen	G	Pier	Full	DP	Eis	.....	Full	U	4	Hart	Det	I	Cl	D	10	48	Ros	36x5†	36x5†	Cla	Fir	6080	165
Stewart 10X	3190	Buda YTU	4½x6	32	L	G	Bus	T	FF	Zen	G	Pier	Full	DP	Eis	.....	Full	U	4	Hart	Det	I	Cl	D	10	48.01	Ross	36x5†	36x5†	Cla	Fir	.....	165
Super Truck 70	4150	Wis	4¼x6	28.9	L	C	Chic	Fin	F	Zen	G	Sim	Full	DD	Bos	.....	Full	A	4	Spic	Shel	W	Shel	½Fl	10.25	49.2	Ros	36x5	40x5†	Smi	.....	6500	164
Tiffin F35	3600	Cont L4	4½x5½	32.4	L	C	Own	Fin	FS	Strm	G	Pier	Det	DP	Bos	W	Full	A	4	Pet	Kal	W	Shel	½Fl	8.7	44.5	Ros	36x5	40x5†	Smi	.....	7800	160
Titan 3½	.....	Buda YTU	4¼x5½	28.9	L	C	B&W	PT	F	Strm	G	Sim	B.B.	DP	Eis	.....	Cott	A	4	UP	Math	I	Own	D	9	48	Lav	36x5	40x10	Day	.....	6500	156
*Tower G3½	3475	Cont L4	4½x5½	32.4	L	C	Own	PT	S	Zen	G	Pier	Full	DP	Eis	.....	Full	U	4	Spic	Det	W	Timk	Flot	10.33	50	Ros	36x5	36x5†	Pru	Gdy	7010	165
Transport 60	2585	Buda HTU	4¼x5½	28.9	L	C	.....	.....	F	Strm	G	Dup	Full	DP	Eis	.....	Full	...	4	Hart	Det	I	Cl	.....	8.15	39.1	Jac	36x4	36x8	.....	.....	5400	150
Twin City 3½	3950	Own	4¼x6	28.9	H	C	Spi	H	F	Sheb	V	Own	B.B.	D	Bos	.....	Full	A	4	Spic	Math	W	Timk	.....	10.33	49.58	Ros	36x5	40x5	Smi	.....	6800	168
*United C 3½	3975	Buda ETU	4¼x5½	28.9	L	C	Mod	H	F	Strm	G	Sim	Full	DD	Eis	Opt	Full	A	4	Spic	Shel	W	Shel	D	10.25	48.1	Lav	36x5	36x5†	Cla	.....	6700	157
Ursus W 60	3950	Buda YTU	4½x6	32.4	L	C	.....	PT	...	Strm	...	Pier	B-Li	DP	Spl	.....	B-Li	..	4	Ther	.....	W	Timk	Flot	.....	.....	Ros	Opt	Opt	Roy	.....	.....	Op
Walter T.	4550	Own DU	4½x6¼	32.4	L	C	Bus	PT	F	Strm	G	Wau	B-Li	D	Eis	W	War	A	4	Own	.....	.....	Own	Flot	8	40	Ros	36x5	40x5†	.....	.....	7800	168
Ward LaFrance 4A	3990	.....	4½x6¼	32.4	L	C	Own	Fin	F	Strm	G	.....	B-Li	DP	Bos	.....	B-Li	A	4	M&E	Mer	W	Timk	Flot	7.8	41.73	Ros	36x5	36x5†	Smi	.....	7750	162
Watson N.	4250	Cont E4	4½x5½	32.4	L	P	R-T	PT	FS	Strm	G	Pier	B-Li	DP	Sim	.....	B-Li	A	4	Spic	Shel	W	Wis	½Fl	9	43.56	Gem	36x5	36x10	C&M	.....	6600	168
White 40	4200	Own	3¾x5¾	22.5	L	C	.....	Fin	F	Own	V	Own	Own	D	.....	.....	Own	U	4	Own	.....	R	Own	Flot	.....	.....	Own	36x5	40x5†	.....	.....	7300	174
Wichita O.	3500	Wau DU	4½x6¼	32.4	L	G	.....	PT	F	Strm	G	Wau	Own	C	Wag	.....	B-Li	A	4	Own	Det	W	Shel	½Fl	11.75	61.10	Ros	36x5	36x5†	Smi	.....	6500	165
Wilcox E.	.....	Buda	4½x6	32.4	L	G	.....	PT	S	Strm	G	Dup	Own	C	Bos	.....	Own	A	4	Own	Shel	R	Walk	½Fl	10	45.1	Own	36x5	36x5†	.....	.....	6600	147
Wilson G.	3685	Own	4¼x5½	28.9	L	G	Lng	PT	FS	Mar	V	Pier	B.B.	D	Eis	.....	Own	A	4	K-B	Per	W	Timk	Flot	8.7	42.3	Ros	36x5	36x5†	Smi	.....	6800	160
*Winther 70	.....	Wis TAU	4½x6	25.6	L	G	Brm	PT	F	Mas	V	.....	B.B.	DP	Eis	W	B-Li	A	4	Bld	Math	I	Cl	D	9	36	Ros	36x5	36x5†	Cla	Fir	6400	150
Wisconsin D (Sauk City)	3000	Wau CU	4⅜x5¾	30.6	L	C	Chic	PT	F	Strm	V	Wau	B-Li	DD	Eis	Opt	B-Li	A	4	Spic	Det	W	Timk	Flot	9.25	......	Lav	36x6	40x8	Bim	Gdy	6800	142
Wolverine L 3½	4100	Cont L	4½x5½	32.4	L	G	Lng	Fin	F	Strm	G	Phar	Full	DD	Eis	Bos	Full	U	4	Up	Am	I	Cl	D	10	48	Ros	36x5	36x10	Cla	Gdy	7300	186
4 Ton																																	
Acme 90	.....	ContL4	4½x5½	32.4	L	C	GO	Fin	F	Rayf	V	Dup	B.B.	DP	Eis	DL	Cott	A	4	Bld	Det	W	Timk	Flot	10.3	53.73	Ros	36x5	40x5†	Bim	.....	6980	168
American	4275	Wis	4½x6	32.4	L	G	GO	Fin	F	Strm	G	Own	Det	DP	Apo	.....	Cott	A	4	Acm	SP	W	Wis	½Fl	10	......	Lav	36x5	36x5†	Smi	.....	7000	158
Bessemer K2	.....	Cont E7	4½x5½	32.4	L	C	.....	C	FS	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Per	I	Torb	D	10	49.5	Ros	36x5	36x10	Sch	Fir	7250	175
Corbitt A-22	3800	Cont E4	4½x5½	32.4	L	C	McC	Fin	FS	Strm	V	Pier	B-Li	DD	Eis	.....	B-Li	U	4	Hart	Shel	W	Shel	½Fl	11.75	47	Ros	36x5	36x10	Smi	.....	7370	178
Denby 27	3895	Cont E7	4½x5½	32.4	L	C	Lng	PT	FS	Strm	G	Sim	Full	DD	Eis	.....	W-Gr	A	4	UP	Det	I	Cl	D	10	49.9	Ros	36x5	36x5†	Smi	Fir	7020	170
Double-Drive B.	4000	Buda ETU	4¼x5½	28.9	L	G	.....	PT	F	Zen	V	Pier	B.B.	DD	Spl	Opt	Own	A	4	Own	Own	W	Own	½Fl	9.75	48.75	Lav	36x6	36x6	Stn	.....	.....	130
Fageol 3½-4	5000	Wau DU	4½x6¼	32.4	L	C	Mod	C	F	Zen	V	Wau	Det	DD	Spl	.....	Own	A	5	Spic	Math	W	Timk	Flot	7.4	79	Ros	36x5	40x5	Stn	.....	7300	172
*Gramm-Pioneer 40	3995	Hink HA200	4½x5½	32.4	L	C	Own	Fin	F	Strm	V	Hink	Own	DD	Eis	NE	Own	A	4	Own	Per	W	Shel	½Fl	8.7	50.6	Ros	36x5	36x5†	Smi	.....	7980	156
*Kimball AE	5000	Wis RAU	4¾x6	36.1	L	C	Flex	PT	F	Zen	V	Sim	B-Li	DP	Spl	W	B-Li	A	4	Pet	US	W	Timk	Flot	8.75	46.8	Ros	36x5	40x7†	Smi	Fir	7800	Op
Kissel Heavy Duty	3675	Own 14000	4¼x5½	28.9	L	C	McC	PT	S	Strm	V	Pier	W-Gr	DP	Eis	.....	W-Gr	A	4	Spic	Shel	W	Shel	½Fl	11.7	58.6	Ros	36x5	36x5†	Smi	.....	7200	168
*Master Y	4490	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	36x6	40.12	Walk	.....	8000	179
Master YL	4590	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	36x6	40x12	Walk	.....	8000	194
Moreland RX	4600	Cont B2	4¾x6	36.1	L	C	Own	C	F	Mas	P	Con	Own	DD	Spl	.....	Own	A	5	Ther	US	W	Timk	Flot	8.75	52.68	Ros	35x6	40x6	Smi	.....	8010	168
Rowe HW 4	4500	Wis UAU	4¼x6	28.9	L	C	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	.....	B-Li	U	4	Spic	Shel	W	Shel	½Fl	8.7	35	Ros	36x5	36x6†	Hoo	.....	6370	156
Schacht	4200	Buda YTU	4½x6	32.4	L	G	Own	PT	F	Sheb	G	Dup	B.B.	D	Bos	.....	Own	A	4	M&E	Nat	W	Own	Flot	10.5	50	Own	36x5	40x10†	StM	.....	7800	168
Union H.	3975	Wis VAU	4½x6	32.4	L	G	GO	Fin	F	Sheb	G	Dup	Full	DD	Eis	LN	Full	U	4	UP	Math	I	Torb	D	10.25	49.2	Ros	36x6	36x10	Smi	.....	7700	174
Union HW	4650	Wis VAU	4½x6	32.4	L	G	GO	Fin	F	Sheb	G	Dup	Full	DD	Eis	LN	Full	A	4	UP	Math	R	Walk	.....	10.5	63.0	Ros	36x6	40x12	Smi	.....	7750	174
U.S., 8	.....	Own	4½x5½	32.4	L	C	Lng	Fin	F	Strm	V	Own	B-Li	DD	Eis	Opt	B-Li	A	4	Opt	Shel	W	Shel	½Fl	10.25	49.6	Lav	36x5	36x5†	Sch	.....	7600	168
5 Ton																																	
Acason M.	.....	Wau EU	5 x6¼	40	L	G	Can	Fin	FS	Sheb	V	Wau	Det	.....	Eis	.....	Cott	A	4	Bld	Det	W	Timk	Flot	10.25	53.3	Ros	36x6	40x6†	Smi	Opt	8970	187
Acme 125	.....	Cont B2	4¾x6	36.1	L	C	GO	Fin	F	Rayf	V	Con	B.B.	DP	Eis	DL	Cott	A	4	Bld	Det	W	Timk	Flot	11.66	60.66	Ros	36x6	40x6†	Smi	.....	8976	180
Atterbury 8E	4975	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Zen	V	Con	B-Li	DD	Ber	.....	B-Li	A	4	Spic	SP	W	Timk	Flot	11.6	62.38	Gem	36x5	40x6†	Stn	.....	9496	167
Atterbury 8E-LWB	5125	Cont B-2	4¾x6	36.1	L	C	Own	Fin	F	Zen	V	Con	B-Li	DD	Ber	.....	B-Li	A	4	Spi	SP	W	Timk	Flot	11.6	62.38	Gem	36x5	40x6†	Stn	.....	9816	192
Autocar Y	3950	Own Y	4¼x5½	28.9	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A	4	.....	.....	R	Own	Flot	8.7	52.2	Ros	34x6	36x12	Hoo	.....	7200	120
Autocar B	4100	Own B	4¼x5½	28.9	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A	4	.....	.....	R	Own	Flot	8.7	52.2	Ros	34x6	36x12	Hoo	.....	7400	156
Available H5	5375	Her T2	5 x6	40	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A	4	M-E	Tut	W	Timk	Flot	11.3	60.45	Ros	36x6	40x12	Smi	.....	9500	190
*Brockway T.	.....	Cont B5	4¾x6	36.1	L	C	Bus	Fin	F	Strm	V	Phar	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Timk	Flot	10.25	54.8	Gem	36x6	40x6†	Smi	.....	8800	174
Chicago D5	.....	Her MU3	4½x5½	32.4	L	C	Brm	PT	F	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	A	4	Pet	Math	W	Timk	Flot	11.66	63.1	Gem	36x6	40x6†	Opt	Sta	8500	168
*Clydesdale 120 B	4500	Cont	4¾x6	36.1	L	C	Own	PT	F	Zen	V	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Timk	Flot	11.66	62.4	Ros	36x6	40x12	Smi	.....	7373	185
Corbitt AA-22	4500	Cont B2	4¾x6	36.1	L	C	McC	Fin	F	Strm	V	Con	B-Li	DD	Eis	.....	B-Li	A	4	Hart	Shel	W	Shel	½Fl	10.25	49.6	Ros	36x6	40x6†	Smi	.....	9685	178
Day-Elder E.	4250	Buda YU	4½x6	32.4	L	C	Bus	Fin	F	Zen	G	Mon	B-Li	DD	Eis	.....	B-Li	A	4	Hart	Shel	W	Shel	½Fl	10.25	49.61	Gem	36x5	40x6†	Smi	Fir	8400	170
Denby 210	4295	Cont E7	4½x5½	32.4	L	C	Lng	PT	FS	Strm	G	Sim	Full	DD	Eis	.....	W-Gr	A	4	Pet	Det	I	Cl	D	12.5	62.7	Ros	36x6	40x6†	Cla	Fir	8590	170
Diamond T-EL	4325	Hin	4½x5½	32.4	L	C	GO	Fin	F	Strm	V	Own	Covt	DD	Bos	.....	Covt	A	4	Spic	Math	W	Timk	Flot	11.66	59.11	Gem	36x6	40x6†	.....	.....	8625	180
Diamond T S	4500	.....	4¾x6	36.1	L	C	GO	Fin	F	Strm	V	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	11.66	56.43	Gem	36x6	40x6†	.....	.....	8750	180
Dixon	4490	Cont E4	4½x5½	32.4	L	C	GO	PT	FS	Zen	G	Pier	Full	.....	Apo	.....	Full	U	4	Hart	IC	W	Timk	Flot	Opt	Opt	Ros	36x5	36x12	Smi	.....	7100	160
D-Olt B-5	4850	Midwest	4½x6	32.4	H	P	G-O	Fin	F	Zen	V	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Spic	SP	W	Timk	.....	11.23	......	Ros	36x6	40x12	.....	.....	8600	168
Fageol 5-6	5700	Wau DU	4½x6¼	32.4	L	C	Mod	C	F	Zen	V	Wau	Det	DD	Spl	.....	Own	A	5	Spic	Math	W	Timk	Flot	8.4	89	Ros	36x6	40x6†	Stn	.....	8300	172
Federal X2	4500	Con B5	4¾x6	36.1	L	C	Own	Fin	F	Zen	V	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	Flot	10.25	60	Gem	36x6	40x6†	.....	Fir	8800	163
Garford 68 D	4500	Buda BTU	5 x6½	40	L	C	Own	Fin	F	Strm	G	Sim	.....	DD	Spl	.....	Own	A	4	Spic	Per	W	Timk	Flot	8.8	......	Ros	36x6	40x6†	Smi	.....	9350	162
Gary M.	4100	Buda BTU	5 x6½	40	L	C	Chic	Fin	F	Mas	G	McC	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	11.66	56.4	Ros	36x6	40x6	Day	.....	8500	182
Giant 18	5000	Cont	4½x5½	32.4	L	P	Own	.....	B	Sheb	G	Mon	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	10.25	49.61	Ros	36x6	40x10	Smi	.....	7500	196
G. M. C. K-101 A	3950	Own	4½x6	32.4	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	A	7	Own	Det	W	Timk	Flot	10	86	Own	36x5	40x6†	Own	.....	8535	163
G.M.C. 101B	4050	Own	4½x6	32.4	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	A	7	Own	Det	W	Timk	Flot	10	86	Own	36x5	40x6	Own	.....	8645	187
*Gramm-Pioneer 50-60	4895	Lib B	4¾x6	36.1	L	C	Own	Fin	F	Strm	V	Con	Own	DD	Eis	NE	Own	A	4	Own	Per	W	Shel	½Fl	9.5	55	Ros	36x6	40x6†	Smi	.....	9700	168
Hall 5 Worm	.....	Cont E4	4½x5½	32.4	L	T	Own	PT	FS	Zen	G	Dup	B-Li	DP	Bos	.....	B-Li	A	..	Opt	Per	W	Timk	Flot	12	......	Gem	36x5	40x6†	Smi	.....	8100	144
Hendrickson K.	4000	Wau EU	5 x6¼	40	L	C	Chic	Pt	F	Strm	G	Wau	Full	D	Spl	.....	Full	...	4	Ther	Tut	W	Timk	Flot	12	57	Ros	36x6	40x6†	Stn	.....	.....	Op
Hurlburt	.....	Buda YTU	4½x6	32.4	L	C	Own	.....	FS	Flch	G	Dup	B-Li	D	Eis	.....	B-Li	A	4	Spic	Per	W	Own	Flot	11	49.9	Ros	36x5	40x6†	Wau	.....	7973	156
Indiana 51	.....	Wau EU	5 x6¼	40	L	C	McC	Fin	F	Strm	G	Wau	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	10.25	54.84	Woh	36x5	40x6†	Smi	.....	9000	170
*International 101	3600	Own	4¼x5	28.9	H	T	Own	Fin	FS	Ens	G	Own	Own	DP	Spl	Own	Own	A	4	Own	.....	I	Own	D	11	53.25	Own	......	......	Own	.....	6715	160
Kalamazoo OK	4350	Wis VAU	4½x6	32.4	L	P	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	B.B.	Shel	W	Shel	½Fl	13	78	Ros	36x6	40x6	Smi	.....	8470	160
*Kelly-Springfield K50	4400	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A	4	Own	Per	C	Own	D	12.24	42.57	Gem	36x6	40x6†	Smi	.....	8400	Op
*Kimball AF	5500	Wis RBU	5 x6	40	L	C	Flex	PT	F	Zen	V	Sim	B-Li	DP	Spl	W	B-Li	A	4	Pet	US	W	Timk	Flot	8.75	46.8	Ros	36x6	40x7†	Smi	Fir	8800	Op
Kissel Goliath	4085	Own 60000	4¼x5½	28.9	L	C	McC	PT	S	Strm	V	Pier	W-Gr	DP	Eis	.....	W-Gr	A	4	Spic	Shel	W	Shel	½Fl	13	65	Ros	36x6	36x6†	Smi	.....	8000	180
Kleiber D.	.....	Buda BTU	5 x6½	40	L	C	RT	PT	...	Strm	G	Sim	.....	DD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	Flot	11.66	56.48	Ros	36x6	40x6	Smi	.....	9200	180
Larrabee W.	4800	Cont B2	4¾x6	36.1	L	C	Bus	Fin	F	Sheb	G	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Opt	Mer	W	Shel	½Fl	10	51	Ros	36x6	40x6†	Smi	.....	9900	186
Maccar M3	.....	Cont L4	4½x5½	32.4	L	C	Own	Fin	F	Strm	G	Mue	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Mer	W	Timk	Flot	8.75	46.81	Ros	36x5	36x6†	Day	Fir	6975	174
Mack AC5	5500	Own AC	5 x6	40	L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	9	28.89	Own	36x6	40x6†	.....	.....	8650	Op
Master B.	4990	Buda ATU	4¾x6½	36.1	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	Opt	Opt	Ros	36x6	40x6†	Smi	.....	9200	170
Master BL	5090	Buda ATU	4¾x6½	36.1	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	Opt	Opt	Ros	36x6	40x6†	Smi	.....	9800	194

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
5 Ton—Con'd		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15	4	16	17	18	19	20			21			22	23		
Master F	5090	Buda ATU	4¼x6½	36.1	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	36x6	40x6†	Wal	.....	9200	170
Master FL	5160	Buda ATU	4¼x6½	36.1	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	36x6	40x6†	Wal	.....	9800	194
Menominee J	4850	Wis RAU	4¾x6	36.1	L	C	Own	Fin	FS	Strm	G	Mon	Det	DP	Eis	Opt	Cott	A	4	Spic	Tut	W	Timk	Flot	11.6	61.43	Ros	36x6	40x12	Smi	Fir	8250	160
Nelson & LeMoon G5	.....	Cont B2	4¾x6	36.1	L	C	Chic	Fin	F	Strm	G	Con	B-Li	DD	Bos	W	B-Li	A	4	Own	Tut	W	Timk	Flot	11.66	.....	Lav	36x6	40x6†	Pru	.....	8000	Op
Ogden G 5	.....	Cont B 2	4¾x6	36.1	L	C	Chic	Fin	F	Strm	G	Con	B-Li	DD	Bos	W	B-Li	A	4	Own	Tut	W	Timk	Flot	11.66	.....	Lav	36x6	40x12	Wal	.....	8600	175
Old Reliable D	5000	Wis RAU	4¾x6	36.1	L	C	Chic	PT	F	Strm	V	Mon	Own	WD	Bos	.....	B-Li	A	4	M-E	Tut	W	Walk	.....	10.33	.....	Ros	36x6	40x6	StM	.....	8400	180
*Oneida E	4725	Hin 1600	4½x5½	33.5	H	C	Mod	C	F	Strm	V	Hin	Full	DD	Apo	.....	Full	A	4	Pet	Shel	W	Timk	Flot	11.66	70	Ros	36x6	40x12	Smi	.....	9400	180
Packard EF	4500	Own	5 x5½	40	L	C	.....	Fin	F	Own	P	Own	Own	DP	Spl	Bj	Own	A	4	Pet	Math	W	Timk	Flot	10.66	49	Ros	36x6	40x6	Smi	.....	9050	156
Parker M20	4850	Wis RBU	5 x6	40	L	C	Own	PT	F	Strm	V	Sim	B-Li	DD	Eis	W	W-Gr	A	4	Bld	Tut	W	Own	Flot	10.25	51.1	Ros	36x6	40x6†	Smi	.....	8400	160
Pierce Arrow R10	4850	Own	4½x6¾	32.4	T	C	Own	Fin	F	Strm	F	Own	Own	DD	Del	Opt	Own	A	4	.....	SP	W	Own	Flot	10	61.2	.....	36x5	40x6†	Day	.....	9300	168
Rainier R-17	5100	Cont B-2	4¾x6	36.1	L	G	EM	Fin	F	Zen	V	Pier	B-Li	DP	.....	.....	B-Li	A	4	Spic	SP	W	Timk	Flot	.....	.....	Ros	36x6	36x36†	Smi	.....	8000	170
Rowe FW5	4850	Wis VAU	4½x6	32.4	L	G	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	.....	B-Li	A	4	Spic	Shel	W	Shel	½ Fl	8.7	40.7	Ros	36x6	40x6†	Hoo	.....	8300	169
Sanford W50	.....	Cont E4	4½x5½	32.4	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Per	W	Shel	½ Fl	10.75	52.03	Ros	36x5	40x6†	Hoo	Fir	9070	174
Schacht	4400	Buda YTU	4½x6	32.4	L	G	Own	PT	F	Sheb	G	Dup	B.B.	D	Bos	.....	Own	A	4	M-E	Nat	W	Own	Flot	14	66.5	Own	36x5	40x6†	StM	.....	8200	168
Schwartz MS	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DP	Bos	.....	Full	A	4	ME	Row	W	Shel	½ Fl	10.25	61.5	Ros	36x6	40x12	Smi	Fir	8285	156
Schwarts M	4900	BudaYTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DP	Bos	.....	Full	A	4	ME	Row	W	Shel	½ Fl	10.25	61.5	Ros	36x6	40x12	Smi	Fir	8365	170
Schwarts ML	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DP	Bos	.....	Full	A	4	ME	Row	W	Shel	½ Fl	10.25	61.5	Ros	36x6	40x12	Smi	Fir	8460	186
*Selden Unit90	4950	Cont B2	4¾x6	36.1	L	C	Lng	Fin	F	Strm	G	Con	Det	D	Eis	.....	B-Li	A	4	Spic	SP	W	Timk	Flot	10.25	55	Gem	36x6	40x6†	Stn	Opt	9650	164
Service 102	.....	Buda	4½x6	32.4	L	C	McC	Fin	F	Strm	V	.....	.....	DP	Eis	.....	B-Li	A	3	Spic	Shel	W	Timk	Flot	.....	.....	Ros	36x6	40x6†	Stn	.....	8760	171
Signal R	4400	Cont B2	4¾x6	36.1	L	C	McC	Fin	FS	Strm	G	Con	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	11.6	56.43	Ros	36x6	40x6†	Smi	Gdy	9510	180
Standard 5K	4400	Cont B2	4¾x6	36.1	L	C	Lng	Fin	F	Strm	V	Con	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Per	W	Timk	Flot	11.66	56.5	Gem	36x6	40x14	Day	.....	8700	164
*Sterling 5-Worm	4950	Ster EU	5 x6¼	40	L	C	Own	PT	F	Zen	V	Wau	H-S	WD	Eis	.....	Own	A	3	Spic	Math	W	Timk	Flot	8.8	39.69	Ros	36x6	40x6†	Pru	.....	9450	168
*Sterling 5-Chain	5500	Ster EU	5 x6¼	40	L	C	Own	PT	F	Zen	V	Wau	H-S	WD	Eis	.....	Own	A	6	UM	Math	C	Own	D	7.04	43	Ros	36x6	40x6†	Smi	.....	9950	174
Super Truck 100	4600	Wis	4¾x6	36.1	L	C	Chic	Fin	F	Zen	G	Sim	Full	DD	Spl	.....	Full	A	4	Spic	Shel	W	Shel	½ Fl	10.25	49.2	Ros	36x5	40x6†	Smi	.....	8500	164
Tiffin TW	4300	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Sheb	G	Con	B.B.	DP	Bos	W	Cott	A	4	Pet	Kal	W	Shel	½ Fl	10.25	53.3	Ros	36x6	40x6†	Smi	.....	8550	168
Titan 5	.....	Buda YTU	4½x6	32.4	L	C	B&W	PT	F	Strm	G	Sim	B.B	D	Eis	.....	Cott	A	4	Pet	Shel	I	Cl	D	11	59	Lav	36x5	40x12	Cla	.....	7900	156
Titan 6	5250	Buda YTU	4½x6	32.4	L	C	BW	ZZT	F	Strm	G	Eis	B.B.	DD	Eis	.....	Cott	A	4	Pet	Shel	I	Cla	D	11	59	Lav	36x5	40x6†	Cla	.....	9100	156
Transport 75	3485	Buda YTU	4½x6	32.5	L	C	.....	.....	F	Strm	G	Dup	B.B.	.....	Eis	.....	Cott	...	4	Hart	Det	I	Cl	.....	10.1	52.1	Jac	36x5	36x12	.....	.....	7600	170
Traylor F	4700	Buda YTU	4½x6	32.6	L	P	GO	Fin	F	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Mer	W	Shel	½ Fl	10.2	.....	Ros	36x6	40x6†	Smi	.....	9000	170
Ultimate D	5500	Buda BTU	5 x6½	40	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	A	4	Spic	Shel	I	Shel	D	8.75	46.8	Ros	36x6	40x14	Smi	.....	8600	180
United V 5	5000	Buda YTU	4½x6	32.4	L	C	Mod	H	F	Strm	G	Sim	Full	DD	Eis	Opt	Full	A	4	Spic	Shel	I	Shel	D	12.5	75.36	Ros	36x5	40x6†	Cla	.....	9150	160
U. S., T	.....	Buda ATU	4¾x6½	36.1	L	C	Lng	Fin	F	Strm	V	Sim	B-Li	DD	Eis	Opt	B-Li	A	4	Opt	Shel	W	Shel	½ Fl	10.25	54.8	Lav	36x6	40x6†	Smi	.....	9700	172
Walter S	4850	Own DU	4½x6¼	32.4	L	C	Own	Fin	F	Strm	G	Wau	B-Li	DP	Bos	W	W-Gr	A	4	Own	Stan	R	Own	Flot	10	45	Ros	36x6	40x6†	Day	.....	8200	168
Ward La France 6A	4590	.....	5 x6¼	40..	L	C	Own	Fin	F	Strm	G	.....	B-Li	DP	Bos	.....	M-E	A	4	M-E	Mer	W	Timk	Flot	8.8	47.08	Ros	36x6	40x6†	Smi	.....	9300	164
White 45	4500	Own	4¼x5¾	28.9	L	C	.....	Fin	F	Own	V	Own	Own	D	.....	.....	Own	U	4	Own	.....	R	Own	Flot	.....	.....	Own	36x6	40x6†	.....	.....	8100	174
Wilcox F	.....	Buda	4¾x6½	36.1	L	C	.....	PT	S	Strm	V	Dup	Own	C	Bos	.....	Own	A	4	K-B	Per	R	Walk	½ Fl	10.25	55.58	Own	36. 5	40x12	Smi	.....	9000	162
Wilson H	4520	Own	4¾x6	36.1	L	G	Lng	PT	FS	Mar	V	Pier	B.B.	D	Eis	.....	Own	A	4	Spic	Shel	W	Timk	Flot	10.25	49.6	Ros	36x6	40x6†	Smi	.....	7500	160
Winther 109	.....	Wis VAU	4½x6	32.4	L	G	Brm	PT	F	Mas	V	Dup	B.B.	DP	Eis	W	B-Li	A	4	Bld	Math	I	Cl	D	12	60.5	Ros	36x5	40x6†	Cla	.....	8300	162
Wisconsin E	3500	Wau DU	4½x6¼	32.4	L	C	Chic	PT	F	Strm	V	Wau	B-Li	DD	Eis	Opt	B-Li	A	3	Spic	Det	W	Timk	Flot	9.25	.....	Lav	35x5	36x10	.....	Gdy	7000	148
5½, 6 and 7 Ton																																	
Available H7	6000	Her T3	5 x6	40		L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A	4	M-E	Tut	R	Sav	½ Fl	14	74.90	Ros	36x6	40x14	Smi	.....	10300	190
Garford 150 A-7½	5200	Buda BTU	5 x6½	40		L	C	Own	Fin	F	Strm	G	Sim	.....	DD	Spl	.....	Own	J	4	Spic	Per	C	Own	D	11.44	.....	Ros	36x6	40x7†	.....	.....	10200	162
Hall 7 Chain	.....	Cont E4	4½x5½	32.4	L	T	Own	Fin	FS	Zen	G	Dup	B-Li	DP	Bos	.....	B-Li	U	..	Opt	Det	C	.....	D	12	.....	Gem	36x5	40x6†	Smi	.....	8100	144
*Kelly-Springfield K60	4600	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Dup	B-Li	D	Eis	W	Covt	A	4	Spic	Own	C	Own	D	12.41	50.26	Gem	36x6	40x7†	Smi	.....	8900	Op
Kelly-Springfield K61	4900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A	4	Pet	Per	I	Cl	D	11.6	61.8	Gem	36x6	36x7	Cla	.....	9025	Op
MacDonald A	5750	Buda YTU	4½x6	32.4	L	C	Own	PT	F	Strm	G	Sim	B-Li	DD	Spl	.....	B-Li	U	4	Own	Own	I	Own	D	17.5	77	Own	40x7	Opt	Opt	.....	6000	...
Macear G	.....	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Zen	G	Con	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Timk	Flot	10.2	54.57	Ros	36x6	40x6†	Smi	Fir	9000	186
Mack AC6½	5750	Own AC	5 x6	40		L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	10.50	33.70	Own	36x6	40x12	.....	.....	8672	Op
Mack AC7½	6000	Own AC	5 x6	40		L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	11.58	37.16	Own	36x7	40x7†	.....	.....	9050	Op
Old Reliable L	6000	Wau EU	5 x6¼	40		L	C	Chic	PT	S	Strm	G	Wau	Own	WD	Bos	.....	Own	J	4	Pet	Math	C	Own	D	10.86	54.9	Ros	36x6	40x7†	StM	.....	10240	136
*Schacht 7	5050	Buda YTU	4½x6	32.4	L	G	Own	PT	F	Sheb	G	Dup	B.B.	D	Bos	.....	Own	A	4	M-E	Nat	W	Own	Flot	14	66.5	Own	36x6	40x7†	St M	.....	8500	168
Sterling 7½-Chain	6000	Ster EU	5 x6¼	40		L	C	Own	PT	F	Zen	V	Wau	H-S	WD	Eis	.....	Own	A	6	UM	Math	C	Own	D	7.26	44	Ros	36x6	40x7†	Smi	.....	10700	174
Tiffin 6 U-W	4500	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Sheb	G	Con	B.B.	DP	Bos	W	Cott	A	4	Pet	Kal	W	Shel	½ Fl	10.25	53.3	Ros	36x6	40x12	Smi	.....	9200	168
Union J.W	5800	Wis RBU	5 x6	40		L	G	GO	Fin	F	Sheb	G	Dup	Full	DD	Eis	LN	Full	A	4	UP	Math	R	Walk	.....	11.5	69.0	Ros	36x6	40x14	Smi	.....	9250	193
Walter R	5350	Own DU	4½x6¼	32.4	L	G	Bus	PT	F	Strm	G	Wau	B-Li	D	Eis	W	War	A	4	Own	.....	...	Own	Flot	10	50	Ros	36x6	40x7†	Day	.....	8500	168
Wichita S	5000	Wau DU	4½x6¼	32.4	L	G	.....	PT	F	Strm	G	Wau	Own	C	Wag	.....	Own	A	4	Own	Det	R	Own	½ Fl	14	66.3	Ros	36x6	40x6†	Smi	.....	10000	165
Winther 140	.....	Wis-RBU	5 x6	40		L	G	Brm	PT	F	Mas	V	Dup	B.B.	DP	Eis	W	B-Li	A	4	Bld	Math	I	Cl	D	12	60.5	Ros	36x6	40x7†	Cla	.....	9600	162
Gasoline Tractor-Trucks																																	
Buffalo Six 2½	3400	Her CU3	4 x5½	25.6		L	P	Own	PT	F	Zen	V	Sim	Covt	D	Bos	Bos	Covt	...	10	Spic	Shel	W	Shel	½ Fl	8.75	170	Ros	Opt	Opt	Way	Gdy	6200	155
Federal Light Duty	2600	Cont C4	4½x5¼	27.2		L	C	Own	Fin	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	Flot	9.2	40.7	Gem	36x4	36x7	.....	Fir	4700	120
Federal Heavy Duty	3350	Cont E4	4½x5½	32.4		L	C	Own	Fin	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	Flot	12	59.8	Gem	36x5	36x5†	.....	Fir	6800	114
Fulton D	2550	H Sp 7000	3½x5	19.6		L	T	GO	H	FS	Cart	G	.....	Covt	DP	Ber	.....	Covt	...	3	UP	.....	I	Russ	D	10.2	.....	Lav	36x4	36x6	Hoo	.....	3300	110
Koehler MT	3275	Her	4 x5½	25.6		L	G	Own	PT	F	Zen	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	9.25	37	Lav	36x4	36x7	Way	.....	5000	129
Lombard 140H.P	.....	Spec 6	5¾x7	72.7		L	C	Spec	H	F	Strm	P	.....	.....	D	.....	.....	Spec	A	...	.....	.....	W	.....	.....	.....	.....	.....	Spe	.....	.....	.....	18000	...
Lombard 50 H.P	.....	Spec 4	5 x6¼	40		L	C	Spec	H	F	Strm	P	.....	.....	D	.....	.....	Spic	A	...	.....	.....	W	.....	.....	.....	.....	.....	Spe	.....	.....	.....	8000	...
Mack AB 5-Ton	3400	Own AB	4 x5	25.6		L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	C	Own	D	10.5	42.27	Own	36x4	36x4†	.....	.....	4940	120
Mack AC 7-Ton	4950	Own AC	5 x6	40		L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	4	Spic	Mer	C	Own	D	9.69	62.20	Own	36x5	40x5†	.....	.....	7670	120
Mack AC 10-Ton	5500	Own AC	5 x6	40		L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	4	Spic	Mer	C	Own	D	10.5	67.38	Own	36x6	40x6†	.....	.....	8250	120
Mack AC 13-Ton	5750	Own AC	5 x6	40		L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	4	Spic	Mer	C	Own	D	11.58	74.29	Own	36x6	40x12	.....	.....	8272	120
Mack AC 15-Ton	6000	Own AC	5 x6	40		L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	4	Spic	Mer	C	Own	D	12.92	82.92	Own	36x7	40x7†	.....	.....	8650	120
MasterDDT	3390	Buda HU	4¼x5½	28.9		L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	34x4	36x7	Wal	.....	4500	130
Walter ST	4850	Own DU	4½x6¼	32.4		L	C	Bus	PT	F	Strm	G	Wau	B-Li	D	Eis	W	War	A	4	Own	.....	...	Own	Flot	10	50	Ros	36x6	40x6†	Day	.....	7900	126
Watson	4050	Cont E4	4¼x5½	32.4		L	P	Jam	C	FS	Strm	G	Pier	B-Li	DP	Sim	.....	B-Li	U	4	Spic	Shel	W	Timk	Flot	8.75	42.35	Gem	34x4	36x5†	M&C	....	6500	80

ELECTRIC COMMERCIAL CARS

E. C. M. Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
Atlantic 1C	2000	2770	.....	12	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x4	Ross	193	65
Atlantic 2C	4000	3590	.....	11	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x3†	Ross	115	65
Atlantic 3C	7000	5220	.....	10	Opt	.....	G-E	G-E	5	C	Timk	.....	36x5	40x5†	Ross	135	65
Atlantic 5C	10000	6230	.....	9	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x5†	Ross	144	65
Atlantic 6C	13000	6940	.....	8	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x6	Ross	156	65
C-T D-1	1000	2200	1585	14	Opt	55	G-E	Own	4	C-T	Flot	Shel	36x3	36x3½	W	100	69
C-T B-1.5	1500	2300	1985	14	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3	36x4	W	91½	65
C-T D-1.5	1500	2300	1985	14	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3	36x4	W	116	71
C-T B-2	2000	2400	2150	14	Opt	50	G-E	Own	4	C-T	Flot	Shel	36x3½	36x5	W	101	66
C-T D-2	2000	2400	2150	14	Opt	50	G-E	Own	4	C-T	Flot	Shel	36x3½	36x5	W	124	70
C-T B-4	4000	4000	2575	12	Opt	50	G-E	Own	4	C-T	Flot	Shel	36x4	36x4†	W	116	68
C-T C-6	6000	4200	2575	8	Opt	35	G-E	Own	4	I	Dead	Shel	36x4	36x4†	W	116	70
C-T C-7	7000	5000	3550	10	Opt	45	G-E	Own	4	I	Dead	Shel	36x5	36x5†	W	126	65
C-T A-7	7000	5800	3850	11	Opt	45	G-E	Own	4	I	Dead	Shel	36x6	36x4†	W	122	60
C-T A-10	10000	6500	3960	10	Opt	45	G-E	Own	4	I	Dead	Shel	36x7	36x5†	W	132	59
*Kelland A	1000	1850	1400	15	Opt	50	G-E	G-E	4	R	Flot	Mer	34x3	34x3	Ross	102	60
*Kelland B	1500	1950	1450	15	Opt	50	G-E	G-E	4	R	Flot	Mer	34x3½	34x3½	Ross	102	60
*Kelland C	2000	2150	1500	15	Opt	50	G-E	G-E	4	R	Flot	Mer	34x3½	34x4	Ross	102	60
Lansden BG ¾	.....	1400	1600	15	Opt	50	G-E	G-E	4	R	Flot	SP	32x4½	32x4½	Lav	90	50
Lansden MC 1	.....	2900	1850	12	Opt	50	G-E	G-E	4	C	D	SP	36x3	36x3½	KH	108	60
Lansden MD 2	.....	4400	2250	11	Opt	50	G-E	G-E	4	C	D	SP	36x4	36x3†	KH	120	60
Lansden ME 3½	.....	5700	2950	10	Opt	45	G-E	G-E	4	C	D	SP	36x5	36x4†	KH	133	60
Lansden MF 5	.....	7500	3350	9	Opt	40	G-E	G-E	4	C	D	SP	36x6	36x5†	KH	146	60
Lansden MG 6	.....	8900	.....	7	Opt	35	G-E	G-E	4	C	D	SP	36x7	36x6†	KH	156	60
Milburn Model 40	2000	1990	1985	15	Opt	50	G-E	Own	4	.....	W	Math	32x4½	33x5	Gem	128	62
Milburn Model 43	1000	1690	1585	18	Opt	50	G-E	Own	4	.....	W	Math	32x4½	32x4½	Gem	115	56
*Walker Model 22	2000	2500	.....	14	Opt	60	West	West	5	O	Own	Math	34x3½	36x4	Ross	101	66
*Walker Model 42	4000	3700	.....	13	Opt	60	West	West	5	O	Own	Math	36x4	36x6	Ross	114	66
Walker M 2	1250	2300	.....	15	Opt	60	West	West	5	O	Own	Math	34x3	36x3½	Ross	94	66
Walker N	10000	6300	.....	10	Opt	50	West	West	5	O	Own	Math	36x6	38x6†	Ross	141	66
Walker P	7000	5300	.....	11	Opt	50	West	West	5	O	Own	Math	36x5	38x5†	Ross	131	66
Walter EN	3600	4400	2900	15	Opt	50	G-E	G-E	4	O	Dead	.....	36x4	36x7	Gem	114	60
Walter EL	6600	4550	3600	13½	Opt	50	G-E	G-E	4	O	Dead	.....	36x5	36x4	Gem	130	60
Walter ES	9600	7200	4350	12	Opt	50	G-E	G-E	4	O	Dead	.....	36x6	40x6	Ros	150	60
Ward WS 2	.....	1650	.....	13	Opt	45	G-E	Own	4	W	Shel	Shel	32x3	32x3½	Own	88	60
Ward WA	.....	2860	.....	12	Opt	45	G-E	Own	4	W	Shel	Shel	32x3½	34x4	Own	90	60
Ward WA 2	.....	2470	.....	12	Opt	45	G-E	Own	4	W	Shel	Shel	32x3½	34x4	Own	90	60
Ward WB	.....	3850	.....	10.5	Opt	40	G-E	G-E	4	W	Shel	Shel	34x4	36x5	Own	102	60
Ward WB 2	.....	3350	.....	10.5	Opt	40	G-E	G-E	4	W	Shel	Shel	34x4	36x5	Own	102	60
Ward WD	.....	4875	.....	9	Opt	35	G-E	G-E	4	W	Shel	Shel	36x5	36x7	Own	114	60
Ward WD 2	.....	4350	.....	9	Opt	35	G-E	G-E	4	W	Shel	Shel	36x5	36x7	Own	114	60
Ward WF	.....	7200	.....	8	Opt	30	G-E	G-E	5	W	Shel	Shel	36x6	36x10	Own	132	70
Ward WF 2	.....	6450	.....	8	Opt	30	G-E	G-E	5	W	Shel	Shel	36x6	36x10	Own	132	70
Ward WH	.....	9400	.....	7	Opt	26	G-E	G-E	5	W	Shel	Shel	36x7	40x12	Own	144	70
Ward WH 2	.....	8200	.....	7	Opt	26	G-E	G-E	5	W	Shel	Shel	36x7	40x12	Own	144	70

Manufacturers and Models Included in Specifications on Preceding Pages

Acason—¾, 1, 1½, 2½, 3½, 5—Acason Motor Truck Co., Wyandotte, Mich.
Ace—1½, 2½—American Motor Truck Co., Newark, Ohio.
Acme—1, 1½, 2 3, 4½, 6¼—Acme Motor Truck Co., Cadillac Mich.
Ajax—1½—Ajax Motors Corp., Boston, Mass.
American—2½, 4—American Motor Truck & Tractor Co., Portland, Conn.
Apex—1, 1½, 2½, 3½—Hamilton Motor Co., Grand Haven, Mich.
Armleder—1, 1½, 2½, 3½—O. Armleder Co., Cincinnati, Ohio.
Atco—1½, 2½—American Truck & Trailer Corp., Kankakee, Ill.
Atlantic—1, 2, 3, 5, 6—Atlantic Electric Vehicle Co., Newark, N. J.
Atlas—1—Atlas Truck Corp., York, Pa.
Atterbury—1½, 2½, 3½, 5—Atterbury Motor Car Co., Buffalo, N. Y.
Autocar—1½, 2, 5—Autocar Co., Ardmore, Pa.
Available—1½, 2, 2½, 3½, 5, 7—Available Truck Co., Chicago, Ill.
Avery—1—Avery Company, Peoria, Ill.
Bell—1, 1½, 2½—Iowa Motor Truck Co., Ottumwa, Ia.
Bessemer—1, 1½, 2½, 4—Bessemer Motor Truck Co., Grove City, Pa.
Birch—1—Birch Motor Cars, Chicago, Ill.
Bridgeport—1½, 2½, 3½—Bridgeport Motor Truck Co., Bridgeport, Conn.
Brinton—1½, 2½—Brinton Motor Truck Co., Philadelphia, Pa.
Brockway—¾, 1½ 2½, 3½, 5—Brockway Motor Truck Co., Cortland, N. Y.
Buffalo—1½, 2½T T—Buffalo Truck & Tractor Corp., Clarence, N. Y.
C. T.—1, 1½, 2, 3½, 5—Commercial Truck Co., Philadelphia, Pa.
Capitol—1½, 2½, 3½—Capitol Motors Corp., Fall River, Mass.
Casco—1—Casco Motors, Inc., Portland, Maine.
Case—2—J. I. Case Plow Works Co., Racine, Wis.
Chevrolet—¾, 1—Chevrolet Motor Co. of Mich., Flint, Mich.
Chicago—1½, 2½, 3½, 5—Chicago Motor Truck, Inc., Chicago, Ill.
Climber—1½—Climber Motor Corp., Little Rock, Ark.
Clydesdale—¾, 1, 1½, 2½, 3½, 5—Clydesdale Motor Truck Co., Clyde, Ohio.
Collier—1, 1½, 2, 2½—Collier Motor Truck Co., Bellevue, Ohio.
Commerce—1¼, 1½, 2, 2½—Commerce Motor Truck Co., Detroit, Mich.
Concord—1½, 2, 2½, 3—Abbott-Downing Truck & Body Co., Concord, N. H.
Corbitt—1, 1½, 2, 2½, 3, 4, 5—Corbitt Motor Truck Co., Henderson, N. C.
Cyclone—1½—The Cyclone Motor Corp., Greenville, S. C.
Dart—1½, 2½, 3½—Dart Truck & Tractor Corp., Waterloo, Ia.
Day-Elder—1, 1½, 2, 2½, 3½, 5—Day-Elder Motors Corp., Newark, N. J.
Dearborn—1, 1½, 2—Dearborn Truck Co., Chicago, Ill.
Defiance—1, 1½, 2—Defiance Motor Truck Co., Defiance, Ohio.
Denby—1, 1½, 2, 3, 4, 5—Denby Motor Truck Co., Detroit, Mich.
Dependable—1, 1½, 2, 2½, 3½—Dependable Truck & Tractor Co., East St. Louis, Ill.
Diamond T—1¼, 1½, 2, 3½, 5—Diamond T Motor Car Co., Chicago, Ill.
Diehl—1, 1½—Diehl Motor Truck Works, Philadelphia, Pa.
Dixon—Dixon Motor Truck Co., Altoona, Pa.
Dodge—½—Dodge Bros., Detroit, Mich.
D-Olt—1½, 2½, 5—D-Olt Motor Truck Co., Inc., Long Island City, N. Y.
Dorris—2, 3½—Dorris Motor Car Co. St. Louis, Mo.
Dort—½—Dort Motor Car Co., Flint, Mich.
Double Drive—4—Double Drive Truck Co., Chicago, Ill.
Douglas—1½, 2, 3—Douglas Motors Corp., Omaha, Neb.
Drake—2—Drake Motor & Tire Mfg. Corp., Knoxville, Tenn.
Duplex—2, 3½—Duplex Truck Co., Lansing, Mich.
Duty—2—Duty Motor Co., Elgin, Ill.
Eagle—2—Eagle Motor Truck Corp., St. Louis, Mo.
Erie—1½, 2½—Erie Motor Truck Mfg. Co., Erie, Pa.
Eugol-1—Eugol Motor Truck Co., Kenosha Wis.
F. W. D.—3—Four-Wheel Drive Auto Co., Clintonville, Wis.
Facto—2½—Facto Motor Trucks, Springfield, Mass.
Fageol—2, 3, 4, 5—Fageol Motors Co., Oakland, Cal.
Fargo—2—Fargo Motor Truck Co., Chicago, Ill.
Federal—1, 1½, 2, 3½, 5, T.T.—Federal Motor Truck Co., Detroit, Mich.
Ford—1—Ford Motor Co., Highland Park, Mich.
Forschler—1, 1½, 2, 3—Forschler Motor Truck Mfg. Co., New Orleans, La.
Front Drive—1½—Double Drive Truck Co., Chicago, Ill.
Fulton—1, 2, T.T.—Fulton Motors Corp., Farmingdale, N. Y.
G. M. C.—1, 2, 3½, 5—General Motors Truck Co., Pontiac, Mich.
G. W. W.—1½—Wilson Truck Mfg. Co., Henderson, Ia.
Garford—¾, 1¼, 2, 3½ 5, 7½—Garford Motor Truck Co., Lima, O.
Gary—1, 2, 2½, 3½, 5—Gary Motor Corp., Gary, Ind.
Gersix—1½, 2½, 3—Gersix Mfg. Co., Seattle, Wash.
Giant—1½, 2½, 3½, 5—Giant Truck Corp., Chicago Heights, Ill.
Graham—1, 1½—Graham Brothers, Evansville, Ind.
Gramm-Bernstein—1, 1½, 2, 3, 3½, 4, 5—Gramm-Bernstein Motor Truck Co., Lima, Ohio.
Hal-Fur—2, 3½—Hal-Fur Motor Truck Co., Cleveland, Ohio.
Hall—2½, 3½, 5, 7—Lewis-Hall Motors Corp., Detroit, Mich.
Harvey—2, 2½, 3½—Harvey Motor Truck Co., Harvey, Ill.
Hendrickson—2½, 3½, 5—Hendrickson Motor Truck Co., Chicago, Ill.
Higrade—1, 1½—Higrade Motors Co., Harbor Springs, Mich.
H. R. L.—¾, 1½, 2½—H. R. L. Motor Co., Seattle, Wash.
Hug—1½—The Hug Co., Highland, Ill.
Hurlburt—1½, 2½, 3½, 5—Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.
Huron—1½, 2½—Huron Truck Co., Bad Axe, Mich.
Independent—1½, 2½, 3½—Independent Motor Co., Youngstown, Ohio.
Independent—1, 1½, 2½—Independent Motor Truck Co., Inc., Davenport, Ia.
Indiana—1½, 2, 2½, 3½, 5—Indiana Truck Corp., Marion, Ind.
International—1, 1½, 2, 3, 5—International Harvester Co., Chicago, Ill.
Jackson—3½—Jackson Motors Corp., Jackson, Mich.

Kalamazoo—1½, 2½, 3½—Kalamazoo Motor Corp., Kalamazoo, Mich.
Kearns—¾, 1½—Kearns-Dughie Motors Co., Danville, Pa.
Kelland—Kelland Motor Car Co., Newark, N. J.
Kelly-Springfield—1½, 2½, 3½, 5, 6—Kelly-Springfield Motor Truck Co., Springfield, O.
Keystone—2—Keystone Motor Truck Corp., Philadelphia, Pa.
Kimball—2, 2½, 3, 4, 5—Kimball Motor Truck Co., Los Angeles, Cal.
Kissel—1, 1½, 2½, 4, 5—Kissel Motor Car Co., Hartford, Wis.
Kleiber—1, 1½, 2, 2½, 3½, 5—Kleiber & Co., Inc., San Francisco, Cal.
Koehler—1½, 2½, 3½, T.T.—H. J. Koehler Motors Corp., Bloomfield, N. J.
Lange—2, 2½—Lange Motor Truck Co., Pittsburgh, Pa.
Lansden—¾, 1, 2, 3½, 5, 6—Lansden Company, Danbury, Conn.
Larrabee-Deyo—1½, 2½, 3½, 5—Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.
Lombard—T.T.—Lombard Auto Tractor Truck Corp., New York, N. Y.
Luedinghaus—1, 1½, 2—Luedinghaus-Espenschied Wagon Co., St. Louis, Mo.
Maccar—2½, 3, 4, 5, 6—Maccar Truck Co., Scranton, Pa.
MacDonald—7—MacDonald Truck & Tractor Co., San Francisco, Cal.
Mack—1½, 2, 2½, 3½, 5, 6½, 7½, T.T.—International Motor Co., New York, N. Y.
Master—1½, 2½, 3½, 5, T.T.—Master Trucks, Inc., Chicago, Ill.
Maxwell—1½—Maxwell Motor Co., Inc., Detroit, Mich.
Menominee—1, 1½, 2, 3½, 5—Menominee Motor Truck Co., Menominee, Mich.
Moline—1½—Moline Plow Co., Moline, Ill.
Moreland—1, 1½, 2½, 4, 5—Moreland Motor Truck Co., Los Angeles, Cal.
Napoleon—¾, 1, 1½—Napoleon Motors Co., Traverse City, Mich.
Nash—1, 2—Nash Motors Co., Kenosha, Wis.
Nelson-LeMoon—1½, 2½, 3½, 5—Nelson & LeMoon, Chicago, Ill.
Netco—2, 2½—New England Truck Co., Fitchburg, Mass.
Niles—2—South Main Motor Co., Pittsburgh, Pa.
Noble—1½, 2, 2½, 3½—Noble Motor Truck Co., Kendallville, Ind.
Northway—2, 3½—Northway Motors Co., Natick, Mass.
Norwalk—1, 1½—Norwalk Motor Car Co., Martinburg, W. Va.
O. K.—1½, 2½, 3½—Oklahoma Auto Mfg. Co., North Muskogee, Okla.
Ogden—¾, 1½, 2½, 3½, 5—Ogden Motor Truck Co., Chicago, Ill.
Old Reliable—1½, 2½, 3½, 5, 6—Old Reliable Motor Truck Co., Chicago, Ill.
Oldsmobile—1—Olds Motor Works, Lansing, Mich.
Olympic—2½—Olympic Motor Truck Co., Tacoma, Wash.
Oneida—2, 2½, 3½, 5—Oneida Motor Truck Co., Green Bay, Wis.
Oshkosh—2, 2½—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.
Packard—2, 3, 5—Packard Motor Car Co., Detroit, Mich.
Paige—1½, 2½, 3½—Paige-Detroit Motor Car Co., Detroit, Mich.
Parker—1, 2½, 3½, 5—Parker Motor Truck Co., Milwaukee, Wis.
Patriot—1, 2, 3—Patriot Mfg. Co., Lincoln, Neb.
Penn—1, 2—Penn Motors Corp., 1714 N. Broad St., Philadelphia, Pa.
Pierce-Arrow—2, 3½, 5—Pierce-Arrow Motor Car Co., Buffalo, N. Y.
Pioneer—1—Pioneer Truck Co., Chicago, Ill.
Pittsburger—2½, 3½—Pittsburgh Truck Mfg. Co., Pittsburgh, Pa.
Power—1½, 3½—Power Truck & Tractor Co., St. Louis, Mo.
Premocar—1½—Preston Motors Corp., Birmingham, Ala.
Rainier—¾, 1, 1½, 2, 2½, 3½, 5—Rainier Motor Corp., New York N. Y.
Ranger—2—Southern Motor Mfg. Ass'n, Ltd., Houston, Tex.
Reliance—1½, 2½—Reliance Motor Truck Co., Appleton, Wis.
Reo—1¼—Reo Motor Car Co., Lansing, Mich.
Republic—¾, 1, 1½, 2½, 3½—Republic Motor Truck Co., Inc., Alma, Mich.
Rowe—1½, 2, 3, 4, 5—Rowe Motor Mfg. Co., Lancaster, Pa.
Ruggles—1½, 2—Ruggles Motor Truck Co., Saginaw, Mich.
Rumely—1½—Advance-Rumely Thresher Co., Inc., La Porte, Ind.
Samson—¾, 1¼—Samson Tractor Co., Janesville, Wis.
Sanford—2½, 3½, 5—Sanford Motor Truck Co., Syracuse, N. Y.
Schacht—2, 3, 4, 5, 7—G. A. Schacht Motor Truck Co., Cincinnati, O.
Schwartz—1, 2, 3, 5—Schwartz Motor Truck Co., Reading, Pa.
Selden—1½, 2½, 3½, 5—Selden Truck Corp., Rochester, N. Y.
Service—¾, 1¼, 1½, 2, 2½, 3, 3½, 6—Service Motor Truck Co., Wabash, Ind.
Signal—1, 1½, 2½, 3½, 5—Signal Truck Corp., Detroit, Mich.
Southern—1, 1½, 2—Southern Truck & Car Corp., Greenboro, N. C.
Standard—1½, 2½, 3½, 5—Standard Motor Truck Co., Detroit, Mich.
Sterling—1½, 2, 2½, 3½, 5, 7½—Sterling Motor Truck Co., Milwaukee, Wis.
Stewart—¾, 1, 1½, 2, 2½, 3½—Stewart Motor Corp., Buffalo, N. Y.
Stoughton—¾, 1, 1½, 2, 3—Stoughton Wagon Co., Stoughton, Wis.
Super Truck—2½, 3½, 5—O'Connell Motor Truck Co., Waukegan, Ill.
Superior—1, 2—Superior Motor Truck Co., Atlanta, Ga.
Tiffin—1½, 2½, 3½, 5, 6—Tiffin Wagon Co., Tiffin, Ohio.
Titan—2, 3½, 5, 6—Titan Truck Co., Milwaukee, Wis.
Thomart Speed—1¼—Thomart Motor Co., Kent, Ohio.
Tower—1½, 2½, 3½—Tower Motor Truck Co., Greenville, Mich.
Traffic—1½, 2, 3—Traffic Motor Truck Corp., St. Louis, Mo.
Transport—1, 1½, 2, 3, 3½, 5—Transport Truck Co., Mt. Pleasant, Mich.
Traylor—1½, 2, 3, 5—Traylor Eng. & Mfg. Co., Cornwells, Pa.
Triangle—¾, 1½, 2, 2½—Triangle Motor Truck Co., St. Johns, Mich.
Triumph—1½, 2, 2½—Triumph Truck & Tractor Co., Kansas City, Mo.
Twin City—2, 3½—Twin City Company, Minneapolis, Minn.
Ultimate—1½, 2, 2½, 3, 5—Vreeland Motor Co., Inc., Newark, N. J.
Union—2½, 4, 6—Union Motor Truck Co., Bay City, Mich.
United—1½, 2½, 3½, 5—United Motors Co., Grand Rapids, Mich.
Ursus—1, 1½, 2½, 3½—Ursus Motor Co., Inc., Chicago, Ill.
U. S.—1¼, 1½, 3, 4, 5—United States Motor Truck Co., Cincinnati, Ohio.
Velie—1½—Velie Motors Corp., Moline, Ill.
Vim—½, 1, 2, 3—Vim Motor Truck Co., Philadelphia, Pa.
Vulcan—2½—Vulcan Mfg. Co., Seattle, Wash.
Walker—½, 1, 2, 3½, 5—Walker Vehicle Co., Chicago, Ill.
Walker-Johnson—2, 2½—Walker-Johnson Truck Co., Woburn, Mass.
Walter—2, 2½, 3½, 5, 7—T. T. Walter Truck Co., New York, N. Y.
Ward—¼, 1, 2, 3½, 5—Ward Motor Vehicle Co., Mt. Vernon, N. Y.
Ward La France—2½, 3½, 5—Ward La France Truck Co., Inc., Elmira, N. Y.
Watson—¾, 3½, T.T.—Watson Wagon Co., Canastota, N. Y.
White—¾, 2, 3½, 5—White Co., Cleveland, Ohio.
White Hickory—1, 1½, 2½—White Hickory Motor Corp., Atlanta, Ga.
Wichita—1, 2, 3, 3½, 5½—Wichita Falls Motors Co., Wichita Falls, Tex.
Wilcox—1, 1½, 2½, 3½, 5—Wilcox Trux, Inc., Minneapolis, Minn.
Wilson—1½, 2½, 3½, 5—J. C. Wilson Co., Detroit, Mich.
Winther—1, 1½, 2, 2½, 3½, 5, 7—Winther Moter Truck Co., Kenosha, Wis.
Wisconsin (Loganville)—2, 2½—Wisconsin Truck Co., Loganville, Wis.
Wisconsin (Sauk City)—1, 1½, 2½, 3½—Wisconsin Farm Tractor Co., Sauk City, Wis.
Witt-Will—1½, 2—Witt-Will Co., Inc., Washington, D. C.
Wolverine—1, 1½, 2, 2½, 3½—American Commercial Car Co., Detroit, Mich.
Yellow Cab—¾, 1¼—Yellow Cab Mfg. Co., Chicago, Ill.

A Construction Which is Said Saves the Driver an Hour a Day

The bumper-step and dash assembly found on the delivery car of the Ward Motor Vehicle Co., Mount Vernon, N. Y., enables drivers to get in and out easily even though their arms may be filled with bundles. The dash is hinged at the middle and folds back out of the way while the driver is making deliveries. Enclosed cars may be similarly furnished.

This Illustration Presents a Favorable Indication of Increasing Business

It shows a large number of trucks of various makes in the mounting department of the Heil Co., Milwaukee, Wis., ready to be equipped with bodies and hoists. This company has experienced an even influx of business since the first of April and anticipates an even heavier flow far into the summer in view of the non-availability of dump trucks for rent in Milwaukee. Everything required in the mounting of bodies and hoists with dispatch and accuracy is provided in this shop. Note the 10 ton crane to the right. These cranes are capable of lifting trucks bodily to any point within the shop.

How They Sell Trucks to Farmers

Selling the Farmer Requires Use of Different Tactics From Those Employed in Selling the City Merchant

Personal Element a Strong Factor in Making Farm Sales

By FRANK H. WILLIAMS

SOME truck dealers are particularly successful in selling trucks to farmers. How do these dealers sell so many trucks to this particular class of prospects?

Surely a consideration of some of the methods used by dealers who are especially successful in this particular line would be of help to other truck dealers.

It was with this thought in mind that the writer recently interviewed a number of dealers who have this year hung up splendid records in farm truck sales and secured from them brief resumes of their methods. The most striking and valuable of the methods used are related in this article and it is hoped that other dealers may secure pointers and ideas and suggestions which will prove of benefit to them in their businesses.

"The reason I am able to sell so many trucks to farmers," said one successful middle western truck dealer, "is because I know what I'm about when I go after the farm trade.

"Not only do I keep the customary card index record of prospective customers, but I also keep records which tell me what sort of products the farmers in my country specialize in, what sort of farm equipment these farmers already have and which also give me a fairly accurate estimate of what each farmer will probably make this year.

"These records I get from my salesmen and from my personal work with the farmers and by co-operation with other dealers in the county who are trying to sell farmers articles which do not compete with my trucks. For instance, I cooperate with an implement dealer who doesn't sell trucks; with a dealer in stationary farm light and power plants; with my bank which specializes in farm accounts and with a building supply company which does a particularly big trade with farmers.

"Through all these various mediums it it a fairly easy task to get all this data and to keep the data right up to date.

"Of course I use all this data continuously in going after the farm trade. I make up lists of farmers who, for instance, are large raisers of garden truck and who haven't any new trucks. Then I go after this class hard one week. Another week I go after the hog raisers and so on.

"By having all this data and by using it in going after the farm truck trade I avoid the likelihood of wasting time soliciting business from farmers who really have no need for a truck or in soliciting from farmers who can't afford to buy trucks. That's what I mean when I say that the reason I sell so many trucks to farmers is because I know what I'm about when I go after the farm trade."

Couldn't you, Mr. Dealer, co-operate more than you do with non-competing lines in getting better farm data and in exchanging prospects and all that sort of thing?

Another successful dealer had this to say:

"I consider that the main reason why I sell so many farm trucks is because I do so much for the farmers.

"Now at first thought that may seem like a rather presumptuous statement. What is it I do for the farmers of my territory that isn't done by other truck dealers?

"Well, there's a lot, if I do say so myself.

Uses "Open Sesame" Tactics

"One thing I do is to furnish free music for a lot of farm meetings. Some time ago I purchased a large phonograph for use in my home and whenever I hear of a farmers' institute or a school meeting or something of that sort in the county I immediately get in touch with the leaders of the meeting and offer to furnish them with phonograph music for the affair free of charge, provided they'll let me put up a sign at the front of the room in which the meeting is held, advertising my trucks. So far there have been only one or two times when this offer of mine wasn't welcomed.

"Of course I take the phonograph to the meeting on one of my trucks and I see to it that the truck carries a big banner advertising my business in a snappy way that will appeal to the farmers. I let this truck stand out in front of the meeting place before and after the meeting and in this way get a lot of free advertising.

"Also whenever I go to a meeting of this kind I always offer to furnish a truck to carry folks to and from the meeting and to haul any stuff that is needed—like ice cream cans—to and from the gathering. And, of course, this truck carries a banner advertising my business, too.

"The main value of a stunt of this sort is that it enables me to become friends with the leaders of the gatherings, who are generally leaders in their immediate territory. And through such friendships I make a lot of sales which lead to other sales.

"It seems to me that nowadays when competition is so keen all along the line it is up to the successful truck dealer to get after business in some such way as this. It is up to the dealer to get business by rendering real service to the prospects and by thus getting to be friends with the prospects.

"It is true that trucks are sold to city business firms on a strict price, quality and service basis, but in selling to farmers it should be remembered that the personal element is still one of the very strongest factors in making farm sales."

A third successful farm truck dealer had this to say:

"With me the proposition of selling trucks to farmers has resolved itself into a matter of making as many calls and as many demonstrations as possible.

"My method is very simple. I start out in the morning with my demonstrator and drive out to the territory I've assigned to myself for working. I drive up to the first farm house in that territory and I get right to the farmer, whether he is in the barn or out in the field, and I get him into the truck and demonstrate the truck to him. I don't let him tell me he isn't interested because I tell him that every farmer must be interested in something that is going to make him money and I tell him the question of buying my truck resolves itself merely into a question of whether or not he wants to start making more money at once.

"This plan has its advantages and its disadvantages. It makes a lot of sales, but it also wastes a lot of time because I make a great many demonstrations to farmers whom I do not sell.

"But I figure that the advantages outweigh the disadvantages. And to my mind the principal advantages are these:

"I am out actually selling all the time instead of fiddling around making up lists of prospects and all that sort of thing. Naturally the more selling experience I get the better salesman I become and the more sales I make. Also by going out after 'em instead of waiting for them to come around and see me I make myself and my business talked about and that word-of-mouth advertising helps considerably in making more sales. Also, I've demonstrated this to be an actual fact—the more calls and demonstrations I make the more sales I make. Which is a tremendous stimulant to work."

Price List of Truck Pneumatic Tire Casings, With Capacities and Inflation Pressures of Larger Sizes

	30 3½	32 4	34 4	32 4½	34 4½	33 5	34 5	35 5	36 x 6			38 x 7			40 x 8			42 x 9			44 x 10		
									Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure
Achilles Rubber & Tire Co., Binghampton, N. Y.																							
Achilles Cord, non-skid	30.00	.....	.....	.....	.....	.....	60.00	.....	83.00	2200	90	125.00	3000	100	.....	....	...	.....	....	...	.....	....	...
Acme Rubber Mfg. Co., Trenton, N. J.																							
Acme Cord, non-skid	18.00	32.00	34.00	41.00	43.00	52.00	.....	54.00	82.00	2200	90	115.00	3000	100	.....	....	...	.....	....	...	.....	....	...
Ajax Rubber Co., Inc., New York, N. Y.																							
Ajax Cord, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	53.45	54.75	78.55	2000	90	113.85	3000	100	146.65	4000	100	.....	....	...	317.25	6000	130
Amazon Rubber Co., Akron, O.																							
Amazon Cord, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	.....	54.75	78.05	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
American Rubber & Tire Co., Akron, O.																							
American Cord, non-skid	20.50	34.00	36.00	43.75	45.25	54.25	57.50	56.75	82.65	2300	90	115.40	3100	100	148.70	4100	110	.....	....	...	.....	....	...
Armstrong Rubber Co., Inc., Garfield, N. J.																							
Armstrong Super Size Cord, non-skid	18.90	34.00	36.00	44.00	46.05	54.75	55.70	57.50	86.00	2200	90	121.00	3000	100	156.00	4000	110	.....	....	...	.....	....	...
Badger Rubber Works, Milwaukee, Wis.																							
Badger Fabric, non-skid	12.90	24.00	26.00	.....	.....	.....	.....	.....	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Badger Cord, non-skid	19.75	32.00	34.00	41.75	43.75	56.75	.....	54.75	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Beacon Tire Co., Inc., Beacon, N. Y.																							
Beacon Rib Skid Cord (Red Seal)	18.60	32.65	34.65	39.35	42.00	51.35	.....	52.00	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Blekre Tire & Rubber Co., St. Paul, Minn.																							
Blekre Cord, non-skid	.....	33.45	35.40	41.95	43.90	52.20	.....	54.70	97.50	2200	90	.....	....	...	156.75	4000	110	.....	....	...	.....	....	...
Braender Rubber & Tire Co., Rutherford, N. J.																							
Braender Bull-Dog Super, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	54.10	54.75	78.55	2200	90	113.85	3000	100	146.65	4000	110	.....	....	...	.....	....	...
Brunswick-Balke-Collender Co., Chicago, Ill.																							
Brunswick Cord, non-skid	18.50	32.50	34.50	42.70	44.85	53.20	53.75	55.85	80.45	2200	90	113.85	3000	100	146.65	4000	110	198.36	5000	120	.....	....	...
Burdick Tire & Rubber Co., Noblesville, Ind.																							
Air Bag Cord, non-skid	39.50	58.75	62.25	67.25	70.50	80.00	.....	83.00	143.00	2200	90	184.00	3000	100	238.00	4000	110	.....	....	...	.....	....	...
Canton-Blackstone Co., Youngstown, O.																							
Canton Cord, non-skid	20.00	33.45	35.35	43.25	45.30	53.80	55.10	56.50	82.65	2200	90	115.45	3000	100	148.70	4000	110	.....	....	...	.....	....	...
Combination Rubber Mfg. Co., Bloomfield, N. J.																							
Combination Viking Cord, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	53.50	54.75	82.65	2200	90	.....	....	...	148.70	4000	110	.....	....	...	.....	....	...
Combination Viking Standard Fabric	12.15	.....	.....	.....	.....	.....	.....	.....	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Combination Viking Standard Cord	13.85	.....	.....	.....	.....	.....	.....	.....	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Dayton Rubber Mfg. Co., Dayton, Ohio																							
Thorobred Cord, non-skid	18.95	32.75	34.95	41.75	43.75	51.75	53.50	54.50	78.95	2200	90	120.10	3000	100	155.20	4000	110	.....	....	...	.....	....	...
Empire Tire & Rubber Co., Trenton, N. J.																							
Empire Cord, non-skid	19.50	32.40	34.25	41.90	43.90	52.15	55.40	54.75	79.30	2000	90	112.20	2700	100	144.55	3650	110	.....	....	...	.....	....	...
Erie Tire & Rubber Co., Sandusky, O.																							
Erie Cord, non-skid	15.00	32.40	34.25	41.90	43.90	52.15	53.90	56.75	90.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Excel Rubber Co., Wadsworth, Ohio																							
Flint Cord, non-skid	24.50	46.30	48.95	52.35	56.50	65.20	.....	68.45	120.00	2200	90	170.00	3000	100	215.00	4000	110	.....	....	...	.....	....	...
Falls Rubber Co., Cuyahoga Falls, O.																							
Falls Cord, non-skid	19.50	34.00	36.50	43.25	45.75	60.00	62.50	65.00	92.00	2200	90	125.00	3000	100	160.00	4000	110	.....	....	...	.....	....	...
Federal Rubber Co. of Illinois, Cudahy, Wis.																							
Federal Cord	.....	.....	.....	46.50	48.50	58.00	60.00	62.00	75.75	....	...	111.75	....	...	143.75	....	...	.....	....	...	.....	....	...
Firestone Tire & Rubber Co., Akron, O.																							
Firestone Cord, non-skid	17.50	32.40	34.25	41.90	43.90	52.15	53.50	57.50	82.65	2200	90	115.40	3000	100	148.70	4000	110	235.00	5000	120	.....	....	...
Fisk Tire Co., Inc., Chicopee Falls, Mass.																							
Fisk Cord, non-skid	21.85	32.75	34.75	42.50	44.50	52.50	.....	55.50	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Fisk Flat Tread Cord	.....	.....	.....	46.75	48.75	58.00	59.50	61.00	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Chico Non-skid Cord	18.85	.....	.....	.....	.....	.....	.....	.....	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Gates Rubber Co., Denver, Colo.																							
Gates Cord, non-skid	18.95	32.85	34.90	42.80	44.80	53.20	61.60	55.90	85.40	2200	90	121.20	3000	100	156.50	4000	110	.....	....	...	.....	....	...
General Tire & Rubber Co., Akron, O.																							
General Cord, non-skid	19.70	34.95	37.85	44.45	46.55	54.90	53.75	60.90	83.40	2000	90	116.30	3000	100	153.15	4000	110	239.95	5000	120	334.30	6000	130
Gillette Rubber Co., Eau Claire, Wis.																							
Gillette Cord, non-skid	18.30	32.50	34.50	42.70	44.85	53.20	.....	55.85	78.55	2200	90	113.85	3000	100	146.65	4000	110	.....	....	...	.....	....	...
Goodrich, B. F., Rubber Co., Akron, O.																							
Goodrich De Luxe Cord	.....	.....	.....	.....	.....	.....	53.50	.....	82.65	2200	90	115.45	3000	100	148.70	4000	110	.....	....	...	.....	....	...
Goodrich Silvertown Cord	18.00	32.40	34.25	41.90	43.90	52.15	.....	54.75	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Goodyear Tire & Rubber Co., Akron, O.																							
Goodyear Cord, All-Weather Tread	18.00	32.40	34.25	41.90	43.90	52.15	53.50	54.75	82.65	2200	100	115.40	3000	110	148.70	4000	120	238.90	5000	130	333.90	6000	140
Goodyear Rut-Proof	.....	.....	.....	.....	.....	.....	.....	.....	86.80	2200	100	121.20	3000	110	156.10	4000	120	.....	....	...	.....	....	...
Goodyear Cross-Rib	18.00	25.45	27.35	31.45	32.15	32.95	39.10	.....	41.05	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Hewitt Rubber Co., Buffalo, N. Y.																							
Hewitt Cord, non-skid	18.75	32.40	34.25	41.90	43.90	52.15	56.00	57.50	82.65	2200	90	115.40	3000	100	.....	....	...	.....	....	...	.....	....	...

Howe Rubber Corp., Inc., New Brunswick, N. J.																							
Howe Ultra Cord, non-skid	24.75	33.10	35.45	42.25	44.20	52.00	53.20	54.30	85.00	2200	90	120.00	3000	100	.....	....	...	.....	....	...	.....	....	...
India Tire & Rubber Co., Akron, O.																							
India Cord, non-skid	19.95	34.90	37.10	42.30	44.40	52.70	56.50	55.40	83.75	2200	90	118.90	3000	100	151.90	4000	110	.....	....	...	.....	....	...
Iowa Cord Tire Co., Inc., Des Moines, Ia.																							
Iowa Cord, non-skid	17.85	29.93	31.68	36.77	38.57	45.79	.....	48.02	68.21	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Kelly-Springfield Tire Co., New York, N. Y.																							
Kelly-Springfield Cord, Kant Slip	18.95	32.75	34.95	42.40	44.30	52.30	.....	54.40	90.90	2200	90	121.50	3000	100	157.50	4000	110	.....	....	...	.....	....	...
Kenyon Co., Inc., Brooklyn, N. Y.																							
Kenyon Cord, non-skid	17.50	31.50	33.50	38.50	41.50	52.15	.....	54.75	80.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Keystone Tire & Rubber Co., New York, N. Y.																							
Keystone Cord, non-skid	19.90	32.90	34.90	41.90	44.85	52.90	54.40	54.75	82.90	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Kokomo Rubber Co., Kokomo, Ind.																							
Kokomo Cord, non-skid	18.00	32.40	34.25	46.10	48.30	57.35	.....	60.25	81.30	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Lee Tire & Rubber Co., New York, N. Y.																							
Lee P. P. Cord	24.75	44.25	.....	54.25	56.75	64.50	66.25	67.75	98.50	1970	90	135.05	2720	100	173.75	3595	110	.....	....	...	.....	....	...
McClaren Rubber Co., Charlotte, N. C.																							
Autocrat Cord, non-skid	18.75	32.50	34.50	42.80	44.85	53.20	54.85	55.95	82.65	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Majestic Tire & Rubber Co., Indianapolis, Ind.																							
Majestic Cord, non-skid	26.35	37.65	39.85	42.55	44.70	53.00	.....	55.70	91.85	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Marathon Tire & Rubber Co., Cuyahoga Falls, O.																							
Marathon Cord, non-skid	19.90	32.40	34.25	41.90	43.90	52.15	53.50	54.75	82.65	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Mason Tire & Rubber Co., Kent, O.																							
Mason Cord, non-skid	18.75	31.95	33.05	40.05	42.25	50.80	52.60	52.50	80.40	22.00	90	110.40	3000	100	142.20	4000	110	.....	....	...	.....	....	...
Mellinger Tire & Rubber Co., Kansas City, Mo.																							
Mellinger Cord, non-skid	19.70	34.95	37.85	44.45	46.55	54.90	.....	56.50	103.10	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Michelin Tire Co., Milltown, N. J.																							
Michelin Cord, non-skid	19.50	33.35	35.50	42.60	44.75	53.75	55.50	56.40	86.00	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Mid-Continent Tire Mfg. Co., Wichita, Kans.																							
Midco Cord, Universal	22.00	38.75	41.15	45.45	47.50	49.25	.....	59.00	92.50	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Miller Rubber Co., Akron, O.																							
Miller Cord, "Geared-to-the-Road"	19.00	32.40	34.25	41.90	46.95	52.11	53.50	57.50	78.05	2200	100	113.85	3000	110	146.65	4000	120	236.25	5000	130	330.00	6000	140
Mohawk Rubber Co., Akron, O.																							
Mohawk Cord, non-skid	26.50	34.10	36.10	44.10	46.20	55.00	56.50	59.50	87.00	2200	90	121.50	3000	100	156.50	4000	110	.....	....	...	.....	....	...
Norwalk Tire & Rubber Co., Inc., Norwalk, Conn.																							
Norwalk Cord, non-skid	.....	.....	.....	.....	.....	.....	52.55	57.20	75.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Oldfield Tire Co., Akron, O.																							
Oldfield Cord, anti-skid	17.50	32.40	34.25	41.90	43.90	52.15	.....	54.75	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Pennsylvania Rubber Co., Jeannette, Pa.																							
Pennsylvania Cord, non-skid	17.50	32.50	34.50	41.90	43.75	52.95	53.95	54.80	84.95	2200	90	105.95	3000	100	149.95	4000	110	.....	....	...	.....	....	...
Perfection Tire & Rubber Co., Fort Madison, Ia.																							
Perfection Cord, non-skid	19.60	32.40	34.25	41.90	43.90	52.15	.....	54.75	90.90	2200	90	121.50	3000	100	157.50	4000	110	.....	....	...	.....	....	...
Standard Fabrics	13.75	25.45	27.35	34.05	36.25	42.15	.....	44.75	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Powertown Tire Corp., Rochester, N. Y.																							
Powertown Cord, non-skid	23.30	39.10	41.00	49.70	53.10	61.00	62.20	63.20	95.90	2200	90	128.25	3400	100	.....	....	...	.....	....	...	.....	....	...
Quaker City Rubber Co., Philadelphia, Pa.																							
Quaker City Cord, non-skid	21.85	32.40	34.25	41.90	43.90	52.15	.....	54.75	85.00	2200	90	115.50	3000	100	.....	....	...	.....	....	...	.....	....	...
Quaker City Fabric, non-skid	.....	15.75	24.95	26.85	33.40	.....	.....	.....	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Racine Rubber Co., Racine, Wis.																							
Racine Multi-Mile Cord	18.85	33.45	35.40	43.25	45.35	53.85	54.40	56.60	77.45	2200	90	112.35	3000	100	144.75	4000	110	.....	....	...	.....	....	...
Republic Rubber Co., Youngstown, O.																							
Republic Cord, non-skid	19.00	33.75	35.85	44.35	46.60	55.25	.....	58.00	82.65	2200	90	115.45	3000	100	148.70	4000	110	.....	....	...	.....	....	...
Samson Tire & Rubber Corp., Los Angeles, Calif.																							
Samson Super Size Cord, non-skid	18.90	33.90	35.85	49.40	52.60	61.50	63.80	65.70	85.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Sprague Tire & Rubber Co., Omaha, Neb.																							
Sprague Cord, non-skid	.....	32.50	34.50	41.90	44.30	52.15	.....	54.75	90.90	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Spreckles "Savage" Tire Co., San Diego, Cal.																							
Spreckles Savage Cord	.....	35.50	37.80	46.80	48.00	57.40	.....	60.00	90.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Standard Four Tire Co., Keokuk, Iowa																							
Standard Cord, non-skid	18.90	32.50	34.50	42.70	44.85	53.20	.....	55.85	85.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Standard Tire Co., Willoughby, O.																							
Tiger Foot, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	.....	54.75	82.65	2200	90	115.45	3000	100	.....	....	...	.....	....	...	.....	....	..
Swinehart Tire & Rubber Co., Akron, O.																							
Swinehart Cord, non-skid	20.00	35.20	37.25	45.55	47.70	56.70	55.00	59.50	82.80	2200	90	115.65	3000	100	.....	....	...	.....	....	...	.....	....	...
Syracuse Rubber Co., Inc., Syracuse, N. Y.																							
Syracuse Syra-Cord, non-skid	18.30	32.50	34.50	42.45	44.0	52.85	54.00	55.50	78.55	2200	90	113.85	3000	100	146.65	4000	110	.....	....	...	.....	....	...
Thermoid Rubber Co., Trenton, N. J.																							
Thermoid cord, non-skid	.....	33.05	34.95	42.75	44.80	53.20	54.60	55.80	84.30	2200	90	117.70	3000	100	.....	....	...	.....	....	...	.....	....	...
Times Square Auto Supply Co., Broadway at 56th St., New York, N. Y.																							
	8.65	13.95	14.85	15.00	15.00	15.00	.....	15.00	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Triumph Fabric	11.95	19.95	21.65	26.95	27.95	33.00	.....	33.95	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Triumph Cord	8.25	13.20	14.20	15.00	15.00	15.00	.....	15.00	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Timesco Fabric	12.95	18.95	20.65	25.95	26.95	32.00	.....	32.95	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Timesco Cord	7.75	12.75	13.95	.....	.....	.....	.....	.....	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Goodale & Ensign Fabric																							
Traveler Rub. Co. of Bethlehem, Bethlehem, Pa.																							
Traveller Cord, non-skid	19.60	32.40	34.25	41.90	43.90	52.15	.....	54.75	83.60	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
United States Tire Co., New York, N. Y.																							
United States Cord, non-skid	.....	.....	.....	.....	47.25	.....	54.10	58.90	78.55	2200	90	113.85	3000	100	146.65	4000	110	.....	....	...	.....	....	...
Victor Rubber Co., Springfield, Ohio.																							
Victor Cord, non-skid	19.00	34.10	36.05	41.90	43.90	52.15	53.50	54.75	82.65	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	..

SERVICE AND REPAIR DEPARTMENTS

Recommended Factory Practice for Disassembling, Adjusting and Assembling Clark Axles

By C. P. SHATTUCK

THE following are the operations employed at the factory of the Clark Equipment Co., Buchanan, Mich., in disassembling, replacing components, reassembling and adjusting the Clark models 1D and 2D axles. These are Clark axles of the internal gear type. There are two major assemblies; a load carrying unit on which the wheels are free to rotate, and a driving unit. The live axle (driving unit) is secured to the load carrying member and its shafts (2) drives the wheels through spur pinions. See phantom view, Fig. 1. Each pinion meshes with a large internal gear bolted to the wheel drum. See Fig. 17.

The Clark live member differs from the conventional axle in that spur pinions are secured to the driving shafts instead of the road wheels. The Clark load carrying member is a solid steel bar, the ends of which are formed into wheel spindles. The spring seats, which also form supports for the brakes and drive shaft housing, are pressed on over the ends of the load carrying member.

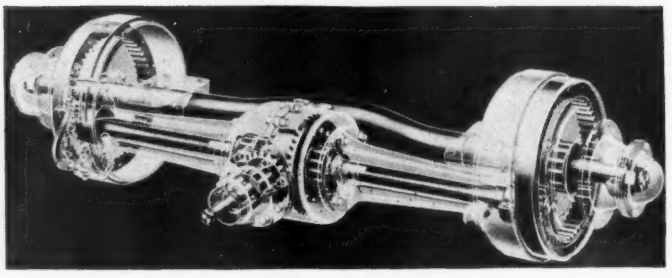
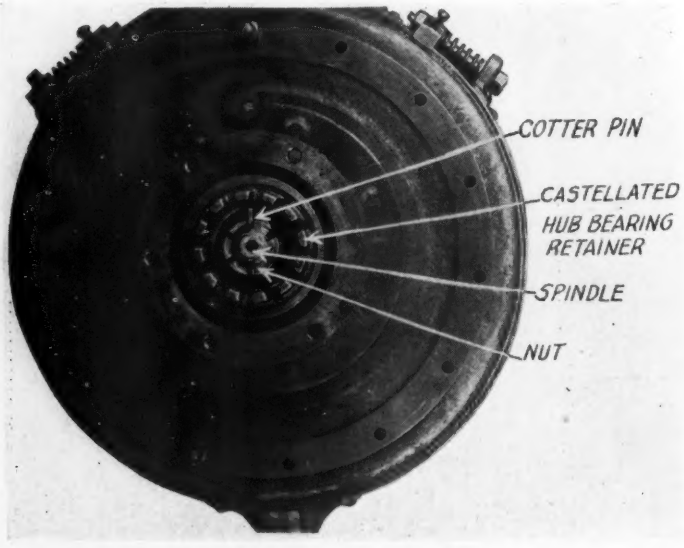


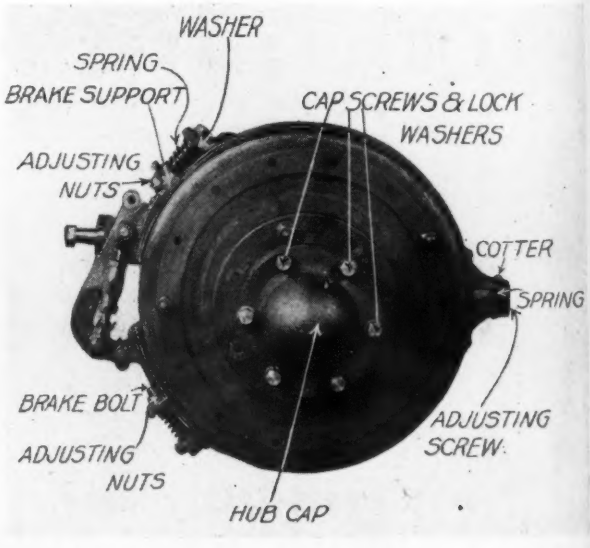
Fig. 1. Phantom View of Clark Internal Gear Drive Axle and Illustrating Load Carrying and the Driving Units

Progressive Steps in Disassembly

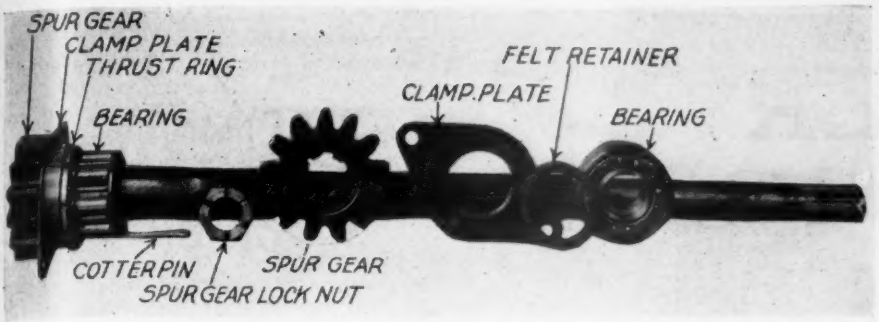
The complete disassembly of the axle, all assemblies, involves 17 operations, as follows:

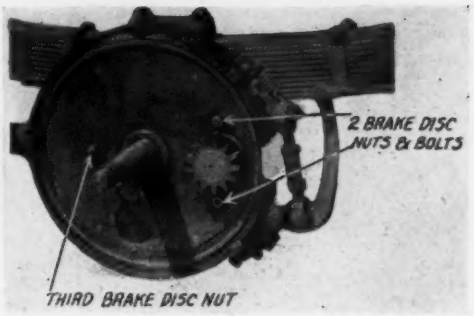
1—Removing Wheels
2—Removing Drive Shafts
3—Disassembling Drive Shafts
4—Removing External Brakes
5—Removing Internal Brakes
6—Removing Brake Disk Assembly
7—Removing Live Axle
8—Removing Brake Flange Support
9—Removing Pinion Flange Assembly
10—Disassembling Pinion Flange Assembly
11—Disassembling Pinion Shaft Assembly
12—Disassembling Pinion Flange Housing Components





Left: Fig. 3. Hub Cap Displaced and Showing Lock Nut, Cotter Pin and Castellated Hub Bearing Retaining Nut. Right: Fig. 2. The Hub Cap is Retained by Cap Screws and Has a Lock-Flange Which Prevents the Castellated Hub Bearing Retaining Nut From Turning





Left: Fig. 5. The Drive Shaft Complete Also Disassembled and With Components in Order of Disassembly, From Left to Right. Right: Fig. 4. Before Drive Shaft Can be Removed the Two Brake Disk Nuts and Bolts Must be Displaced. The Third Brake Disk Nut is Removed Previous to Removing Brake Disk Assembly or Operation No. 6

13—Removing Differential
14—Removing Differential Bearing
15—Removing Outer Race, Differential Bearing
16—Removing Axle Housing
17—Disassembling Differential

Certain operations in the progressive disassembly may be eliminated when it is desired to disassemble a particular part, i.e., it is not necessary to take out a differential to remove a spur gear, etc.

Operation No. 1

Removing Wheels—Remove six 7-16 in. cap screws and lock washers and hub cap. See Fig. 2. The hub cap has a lock—flange—preventing the castellated hub bearing retainer nut (see Fig. 3) from turning. Remove castellated hub bearing retainer nut. Remove cotter pin from nut on spindle and displace nut. See Fig. 3. Remove washer. Grasp opposite spokes of wheel and pull off. Repeat operations to remove other wheel.

Operation No. 2

Removing Drive Shafts—Remove cotter pins (2) from brake disk bolts retaining the spur gear clamp plate (see Fig. 4) and remove the brake disk bolt nuts, (2) ⅜ in. nuts. If the lower brake disk bolt turns when attempting to displace the nut hold the bolt head with a wrench. To remove the spur gear and drive shaft assembly, insert a lever on either side in back of the gear and pry outward. Remove felt retainer from wheel spindle. Note: On some older models of axles the spur gear is integral with the drive shaft.

Operation No. 3

Disassembling Drive Shaft—Remove cotter pin from spur gear lock nut and remove lock nut. The gear is broached to fit the shaft and is a press fit, so an arbor press should be employed to remove the gear. Press off gear. Remove clamp plate, felt retainer, thrust ring and bearing. Fig. 5 shows a drive shaft assembly, also its components and in the order of their disassembly, from left to right.

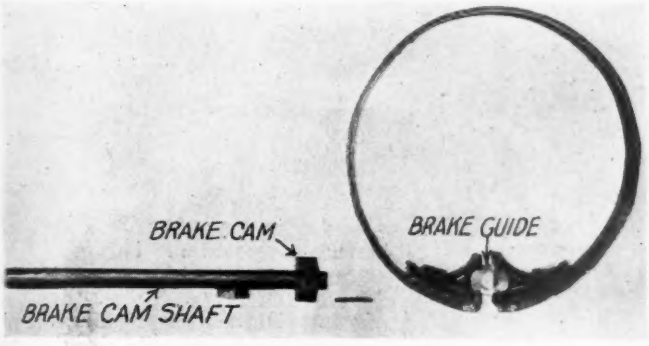


Fig. 7. The Internal Brake is Easily Removed by Displacing Cotter Pin From Cam End of Cam Shaft and Slipping Off the Band.

Operation No. 4

Removing External Brakes—Remove cotter pin from stop adjusting screw (see Fig. 2) and remove screw and coil spring. These are shown displaced in Fig. 6. Remove brake bolt nuts (2), top and bottom from each brake adjusting bolts. There are two to each brake. Remove the bolts (2), springs and washers. A washer is employed between each end of spring and brake support. Pull brake lever outward, compressing band, and use a screw driver to pry band away from brake band support. The band is displaced complete, or as shown at Fig. 6.

Operation No. 5

Removing Internal Brakes—Remove cotter pin from cam end of brake camshaft and slip off band. See Fig. 7, showing complete disassembly.

Operation No. 6

Removing Brake Disk Assembly—Remove cotter pin from third or remaining nut of brake disk bolt. See Fig. 4. Two of these nuts were removed in operation No. 4. Remove brake disk bolt nut and slip off disk. The disk bolt has a tube spacer between it and the brake flange.

Operation No. 7

Removing Live Axle from Load Carrying Member—Remove cotter pins from nuts A and AA (see Fig. 8) and remove nuts. Remove bolts C and CC. There are four bolts in all, two on either side of the axle. Remove load carrying member, to which are attached brake flange.

Operation No. 8

Removing Brake Flange—Remove two ⅞ in. cap screws, B and BB, and lock washers from brake support. See Fig. 8. The brake flange is located

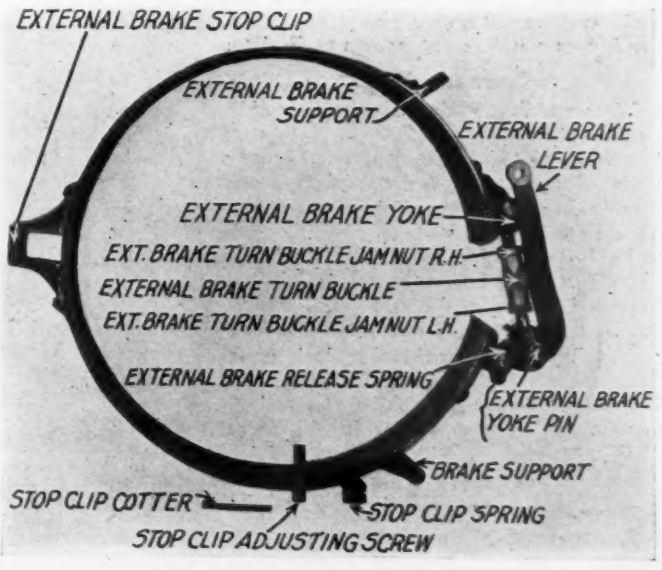


Fig. 6. To Remove External Brake Displace Cotter Pin, Stop Adjusting Screw and Spring Shown, Then Brake Bolt Nuts From Each of Adjusting Bolts

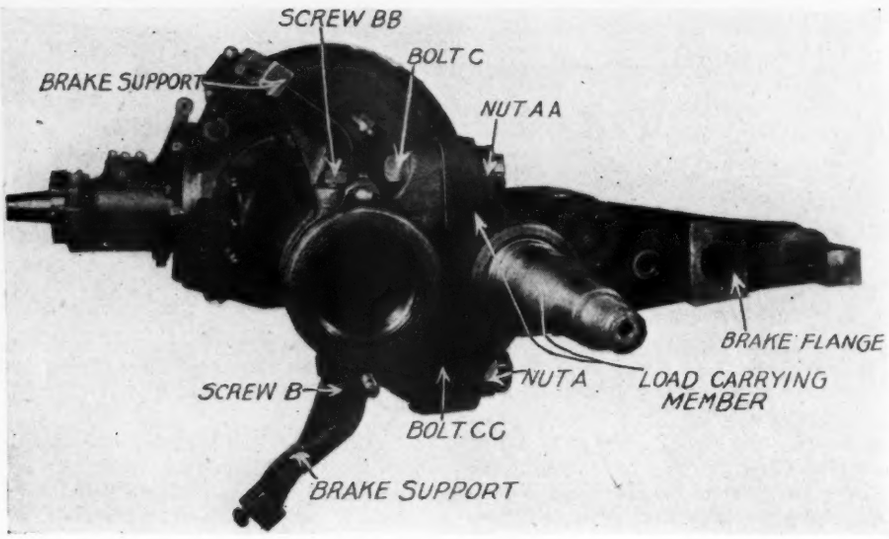
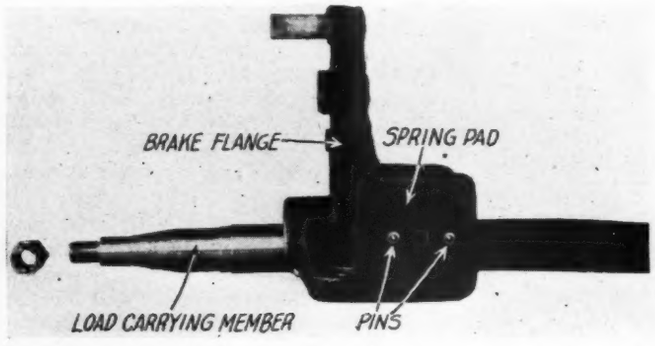
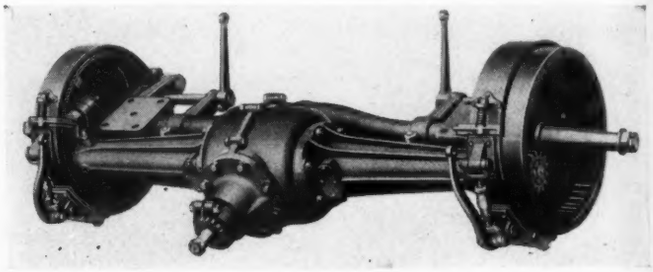


Fig. 8. To Separate Live Axle From Load Carrying Unit Remove Nuts "A" and "AA" and Bolts "C" and "CC"

by means of two pins, the location of which is indicated in Fig. 9. These pins are ⅜ x 1¼ in. and must be drilled out before attempting the removal of the brake flange. Drive off flange. It is shown displaced from the axle, also the axle, at Fig. 9.



Left: Fig. 9. Before Attempting to Remove Brake Flange, Located by Two Pins Indicated, These Must be Drilled Out Before Driving Off Flange.



Right: Fig. 19. The Clark Two and a Half Ton Axle or 2D Model

Operation No. 9

Removing Pinion Flange Assembly—On the top of the differential case is a plug. Remove this to provide a vent, then remove lower or drain plug and drain lubricant from case. See Fig. 10. Cut and remove the wires from the six 7-16 in. cap screws, remove screws and lock washers. Remove pinion flange assembly as a unit, or as shown at Fig. 11.

Operation No. 10

Disassembling Pinion Flange Assembly—Remove pinion flange lock plate nut, bolt and lock plate. See Fig. 11. Remove pinion flange cover plate screws (4), lock washers, and remove plate with gasket. This plate has an extension meshing with the adjusting collar, preventing the latter from turning. Screw out outer pinion bearing adjusting collar and felt. Straighten tits on lock plate between bearing lock nuts. Remove outer bearing lock plate nut, lock plate and inner lock plate nut. Use a lead hammer or block of wood to drive out shaft assembly, which is shown at Fig. 13.

Operation No. 11

Disassembling Pinion Shaft Assembly—Remove cotter pin from pinion shaft nut. Remove pinion shaft, which is keyed on. Remove bearing and spacer.

Operation No. 12

Disassembling Pinion Flange Housing Components—See Fig. 12. Remove outer bearing adjusting collar if it was not removed when disassembling the pinion flange assembly. Remove outer pinion bearing and inner pinion bearing adjusting collar. The latter screws out. Remove pointed set screw by displacing lock nut and washer. The point of this screw enters hole in inner pinion bearing sleeve, preventing movement of the sleeve. Fig. 12 indicates the holes in these members. Remove sleeve and bearing washer. Care must be taken in the reassembly to so locate the outer pinion bearing sleeve that its hole will align with the point of the screw member.

Operation No. 13

Removing Differential—Remove differential case nuts (6) and drive out bolts (6). See Fig. 10. Slip off one axle housing. The housing removed and showing differential complete is shown in Fig. 15. Note: The differential thrust bearing is adjusted by a nut or collar, which screws out. It is best and cheapest to replace worn or damaged members as a unit, as the bearing is pressed in.

Operation No. 14

Removing Differential Bearing—Drill the spots prick-punched and drive the extended metal towards center or back, so that the plain washer or bearing retaining member can be displaced. Remove bearing cage and outer race. Remove main shaft housing cover plate, which is held by 4 machine screws with lock washers.

Operation No. 15

Remove Outer Race, Differential Bearing—Remove differential adjusting nut as-

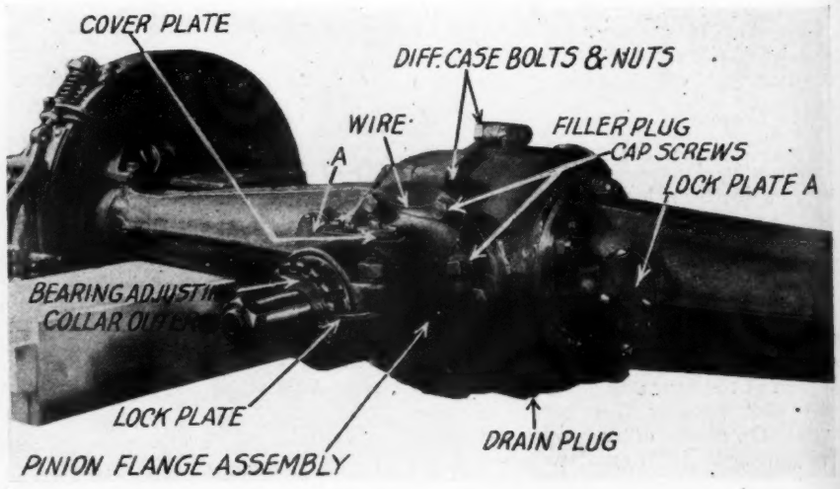


Fig. 10. Illustrating Components Referred to in Operations 9, 10, 13 and 16, and Those Employed in Making Adjustments; the Filler and Drain Plugs Are Also Indicated

Fig. 17. Showing How Internal Gear is Bolted, Making for Easy Removal and Replacement.

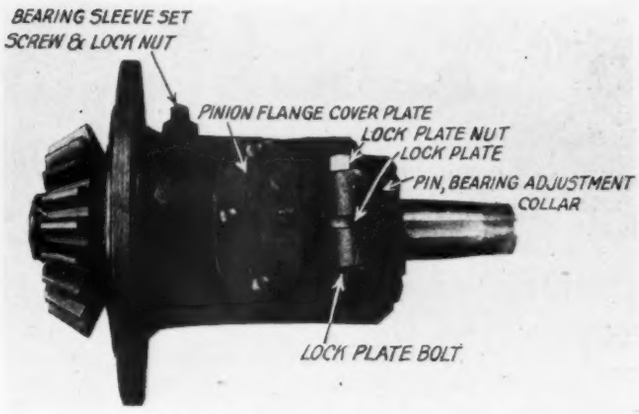


Fig. 11. The Pinion Flange Assembly, Having a Set Screw With Lock Nut, the Set Screw Preventing Turning of the Adjusting Collar Shown in Fig. 12

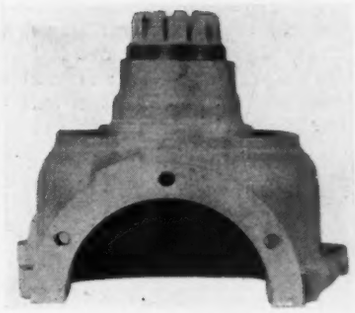


Fig. 16. Showing One-half of Differential Housing and Member Used When Adjusting Pinion and Ring Gear of Live Axle; the Lock Plate in Pinion Flange Housing Meshes With Slot in Bearing Adjusting Member, Preventing Its Turning.

sembled with thrust bearing. Use a punch against outer washer in case and drive out.

Operation No. 16

Removing Axle Housings—Remove cotter pins from 6 castellated nuts, lock washers and nuts from each housing, right and left. See Fig. 10.

The differential is conventional and is disassembled and reassembled according to standard practice. If for any reason a component is replaced, care should be taken to see that the wire locking differential case bolts are replaced and gears, pinions, etc., well lubricated before replacing the assembly in the housing.

Adjustments

Pinion and Ring Gear, Live Axle—Provision is made for adjusting the relation of the drive pinion with the ring gear of the live axle or for obtaining the proper tooth contact. The back lash of the gears should not exceed approximately .008 in. If the back lash be greater, remove the nut and lock washer of the bolt holding lock plate in pinion flange housing, and remove the bolt and lock plate. See Fig. 10. Screw in the bearing adjusting collar or cap until back lash is reduced to .008 in. or proper paint mesh. Replace lock plate, bolt, lock washer and nut. The adjusting collar must be so turned that the lock will mesh with a slot in adjusting member.

Differential Ring Gear—The mounting of the ring gear of the live axle is such that it can be moved sidewise when necessary, as when installing a new gear. To adjust, remove the 4 machine screws from each lock plate, A, which will give access to the bearing adjusting nuts. To bring about a closer mesh of the pinion and ring gear, unscrew bearing adjusting nut on right when facing axle from rear. Next screw up bearing adjusting nut on left, which will carry the ring gear to the right. Turn both adjusting nuts the same distance. If the mesh be too close reverse the operation. Both bearing adjusting nuts must be so turned that the flange on lock plates will register with a slot in the bearing adjusting nut. Fig. 10 shows the lock plates, and Fig. 16 a differential housing with bearing adjusting nut partly screwed out.

The internal gears should be lubricated with heavy graphite grease every 3000 miles. Access to the gears is through a cover plate inside of each brake drum. Each wheel should be removed every 3000 miles and the wheel bearings repacked with a medium heavy cup grease. The lubricant in the differential gear case should be changed every 5000 miles. The proper level is about one-third. In winter use 600W or an oil of similar consistency. In summer use a medium weight grease. The pinion shaft bearings are lubricated by the oil in the gear case.

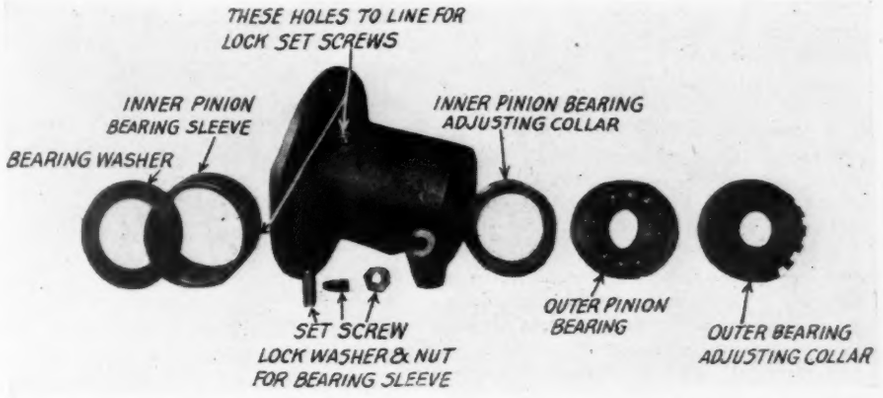
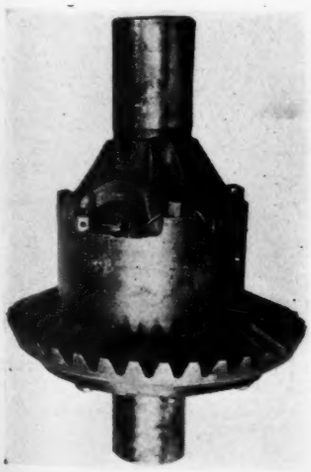
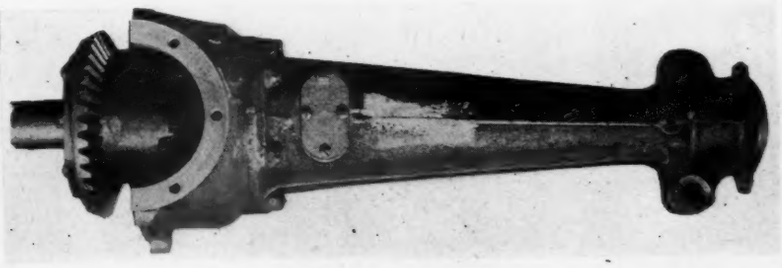


Fig. 12. The Pinion Flange Housing, Completely Disassembled, Excepting Pinion Shaft Shown in Fig. 13. In the Reassembly It is Most Important That Hole in Inner Pinion Bearing Sleeve Aligns With That in Housing

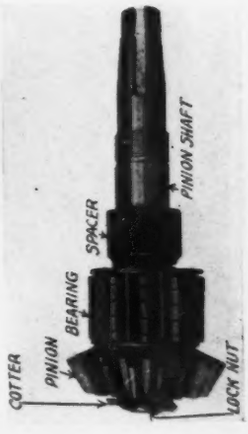




Above: Fig. 15. A Drive Shaft Housing and One-half of Differential Housing, and Showing Differential.

Left: Fig. 18. If Differential be Disassembled, Replace Wire Locking the Case Bolts.

Right: Fig. 13. The Pinion Shaft Assembly With Components Lettered.



Use medium heavy cup grease to lubricate the brake camshaft bearings, turning down the cup at least one full turn every 100 miles. The 1919 and 1920 axles are equipped with oilless camshaft bearings. Use light cup grease or heavy oil for the spur gear bearing.

The above operations describe the disassembling steps on a Clark 1-D axle. Practice differs very slightly on other models.

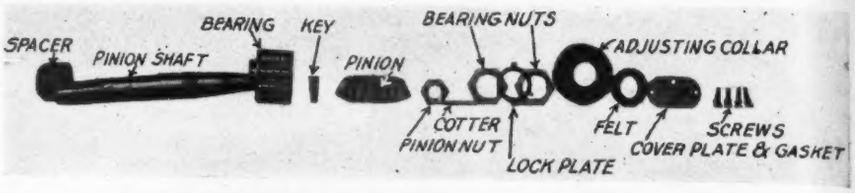


Fig. 14. The Pinion Shaft Disassembled and Parts Arranged in Order of Assembly From Left to Right. Other Components of Pinion Flange Housing Are Shown in Order of Reassembly (Left to Right) at Right of Cotter Pin

Four Ways Opened to Service New York City With Buses

There are at least four ways in which buses may become a useful part of the transportation scheme in New York City in the opinion of Daniel L. Turner, Consulting Engineer of the Transit Commission of New York, speaking before the truck manufacturers of the National Automobile Chamber of Commerce recently.

"There are at least four ways," said Mr. Turner, "I believe, in which buses may become a useful element in the transportation scheme of New York. But in every case their use would be as a supplement in the existing services, not as a general substitute for such services.

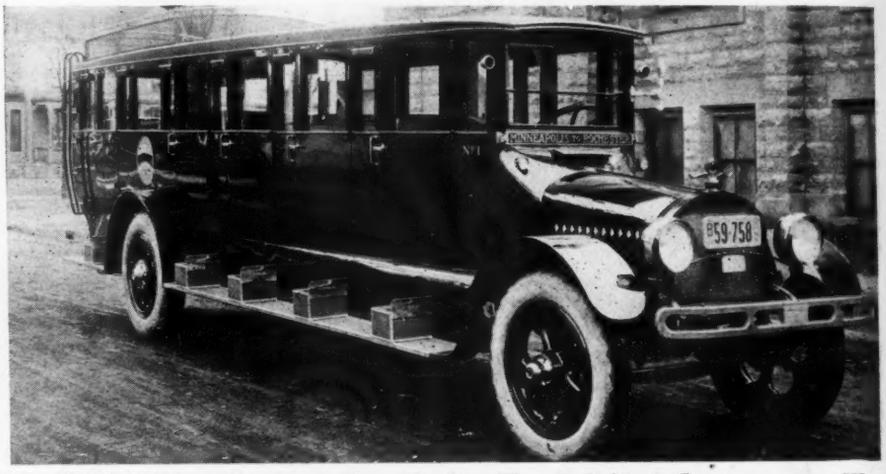
"First, buses may be used to furnish a special route service. Every day service of a special character for regular customers. Regular through route special service workward in the morning and homeward at night can be furnished for segregated groups of patrons.

"Secondly, New York needs more crosstown or circumferential routes in order to better articulate the traffic carried on the workward and homeward lines. Crosstown routes are relatively short. This is particularly so in Manhattan. Such a service where possible can be furnished better by buses than in any other way.

"Thirdly, buses can be used to some extent to accommodate the short-haul traffic in the congested centers in the place of the surface car lines. This would not mean an elimination of surface cars and substitution of buses—but use of buses in place of cars only when and where excessive vehicular congestion requires it.

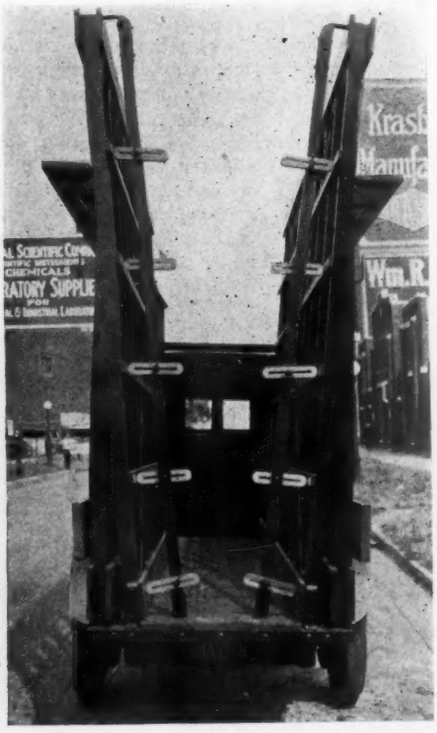
"Fourthly, and the most important of all the uses mentioned, the bus should be utilized as an important auxiliary to our subway and elevated lines in developing the outlying areas of the city."

Inasmuch as the Transit Commission has not made public its plan for using buses in its general transit scheme, Mr. Turner's unofficial remarks are considered therefore of special significance.



This Multiple Limousine Type Bus, Having Five Individual Compartments, Was Recently Put Into Service by the De Luxe Line, Running From Minneapolis to Rochester, a Distance of 90 Miles

Each compartment is separated by glass partitions and provided with individual doors on each side. The last compartment is larger than the rest, having a rotunda seating nine. This section is used as a smoking compartment. Chassis is a regular Mack of 216-in. wheelbase



Views of a Model D1, 192 In. Wheelbase, Master Chassis With Underslung Spring Suspension and Walker Axle

It is equipped with a special body for glass haulage. The top of the frame is 26 in. from the ground and the top of the bed is 28¼ in. from the ground

Service Station and Repair Shop Appliances

Hannifin Adjustable Boring Bars

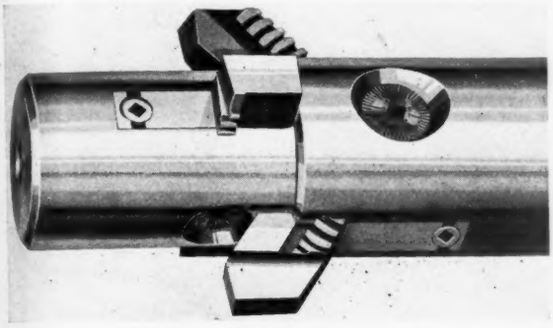
Hannifin Adjustable Boring Bars offered to the trade by the Hannifin Mfg. Co., Chicago, Ill., are used for rough boring, finish boring, reaming and line reaming. All parts are locked into one solid unit, of which the contact surfaces are large, straight metal surfaces, giving the rigid and heat absorbing qualities of a solid bar.

Other constructional details claimed are minimum number of parts; rigidity and strength due to small amount of stock cut from bar; greater expansion, and heavier cutting tools. Besides, cutters can be stacked in multiples with independent adjustment to each set, and in every position they are backed metal to metal, thus eliminating loosening. Accurate scroll adjustment is stated to insure true bore, and graduated scroll adjustment to save time when adjusting cutters. The cutters are easily adjusted in and out, and replaced and adjusted to size quickly and without removing bar from machine. Overlap of cutters at bottom adds to rigidity and life of the tool. This bar also has a positive locking device consisting of only one unit.

dowel pins that fit into the holes in the bottom of the cylinder block and two cap screws that screw into the water inlet flange.

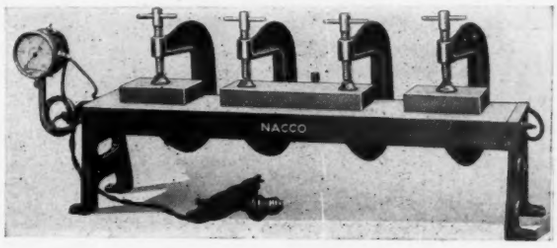
Its construction is such that no bolt or support passes through the space between the No. 2 and 3, thereby leaving the center main bearing bolt nuts easily accessible in all positions.

The holding fixtures are made of close grained gray iron, and hydraulic drawn steel tubing is used for the spindle. As its name indicates, it may be swung completely around and locked in the desired position by a lock screw.



Left: Constructional Details of the Hannifin Adjustable Boring and Reaming Bar

Right: The Nacco Automatic Electric Steam Vulcanizer With Complete Equipment.



Nacco Steam Vulcanizer

An automatic control is the salient feature of the Nacco Automatic Electric Steam Vulcanizer made by the Newsom Automatic Controller Co., St. Louis, Mo. It uses steam generated by electric heat. When the correct amount of steam is generated the steam pressure turns off the electricity, then when the plate cools off a fraction of a pound, due to radiation, it automatically turns the current on again.

To prevent accident in case the controller has been altered or misused, a fusible or rupturable plug is installed at the rear of the steam chest, and is designed to rupture at 100 lb. pressure, thereby letting the entire contents out of the vulcanizer.

The heating unit consists of a copper tube .281 in. in diam., which is so applied in the plate that it is immersed in the water, thus heating inside the water. This is a feature that is said to make for lower operating cost. The plate is constructed of one-piece boiler tube with 5/8 in. machine steel ends welded in.

Bull-Dog Lock Washer

"It never lets go of the bolt," is the expression the manufacturer employs in summarizing the quality of tenacity possessed by its Bull-Dog washer and nut lock combined.

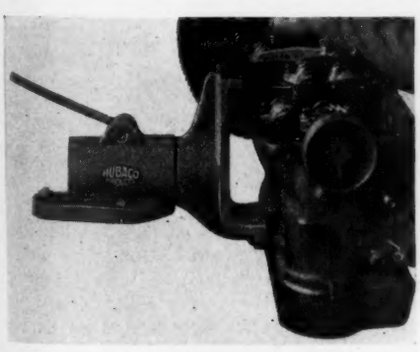
These units are designed for standard bolts, nuts and tools. The washer is applied like an ordinary washer. It is stated to function best when under extreme vibration and shocks and that it will not injure machined parts, nuts or threads.

The edge of the nut plays on the angles of the lugs, forcing the whole washer back of center and causing the tooth or dog to grip the thread. When the nut is drawn up tight the edge of the nut falls between the lugs, the washer turning up with the nut until it is dead tight.

It is manufactured by the Bull-Dog Lock Washer Co., 269 S. Seventh St., Baltimore, Md., in U. S. standard and S. A. E. thread sizes.

Hubaco Full Swing Bench Vise

The Hughson Bacon Co., Inc., Market at 11th St., San Francisco, Cal., has developed a full swing vise especially for service work on the Model T Ford engine. It is attached by two tool steel

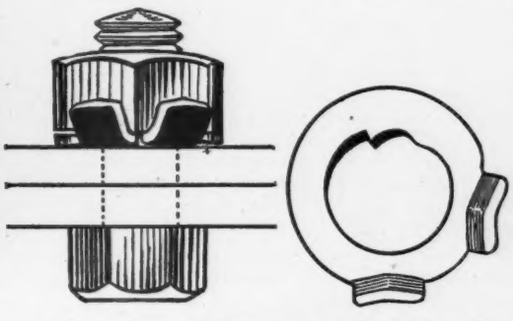


Showing the Manner of Employing the Hubaco Vise

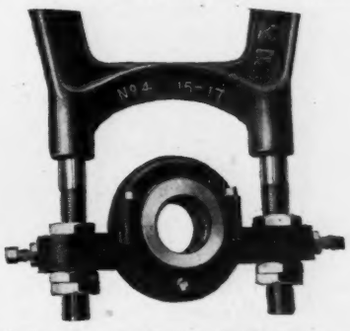
Skayef Ball Bearing Hangers

The improved Skayef Ball Bearing Hanger manufactured under the supervision of SKF Industries, Inc., is distinguished by several features of design. The hanger is built around the SKF marked self-aligning ball bearing.

The hanger, however, uses the principle of two-point suspension, carrying the bearing in a split housing which is rigidly held by two threaded suspension rods. This makes a strong, compact unit easy to assemble, locate and inspect. Any necessary vertical or horizontal adjustment



Two Views Showing the Tenacity of Bull-Dog Lock Washers



Improved Skayef Ball Bearing Hanger

can be easily made at the end of the housing by lock nuts and set screws. This provision is claimed to eliminate the possibility of applying pressure which otherwise might be transmitted to the bearing while making adjustments.

The feature of self-alignment furnished within the bearing, itself, enables the shaft to turn freely at all times with a minimum amount of friction and prevents rubbing, heating and binding.

New Buffalo 24 Inch Drill

The Buffalo Forge Co., Buffalo, N. Y., has designed this drill especially with reboring jobs in view. It also meets all the requirements of a first class machine shop drill.

It will drill to the center of a 24 in. circle, has a spindle travel of 14¼ in., and can be instantly changed from plain to back-geared drive by simply disengaging

This Buffalo 24 Inch Drill Was Especially Designed for Reboring Jobs. It Contains Many New Features, and Lists at $350

a knurled knob in the top gear and throwing in the back gears by means of hand levers. A locking screw holds this in place.

An adjustable automatic trip throws out the power feed when the piece has been drilled to required depth. The ball bearing spindle is graduated and ground; lever handle is adjustable from 6 to 18 in., and held in place by a tension spring; all bearings are split and adjustable; the latch-hinged worm-feed runs in oil; all gears are machine cut and supplied with heavy bronze bushings.

A special tapping attachment of standard design, accurate and well made, can be supplied to operate efficiently on this model as well as the 25 and 20-in. Buffalo drill. List price, $350. Tapping attachment, $100 additional. Weight, 1100 lb.

Ammco Multi-Purpose Machine

Rigidity of construction, and accuracy of operation, together with adaptability to a large variety of operations, such as cylinder reboring, drilling and boring, mill-

A Large Variety of Operations Can be Performed by This Ammco Multi-Purpose Machine

ing, gear cutting, cutting keyways, splining, squaring shafts, etc., is stated by the manufacturer, the Automotive Maintenance Machinery Co., 326 West Madison St., Chicago, Ill., to make this machine especially useful equipment for garages and service stations.

It is constructed in accordance with correct engineering principles. All parts are uniform and interchangeable, making possible, if desired, the purchase of the machine for reboring work only, and the securing of milling and drilling equipment later when needed. The main frame is heavy and properly proportioned to prevent twisting strains and insure perfect alignment of the working parts.

Mikro-Indicator Cylinder and Piston Gages

Two items of gage equipment that should hold interest for the repairman, garageman and accessory dealer are the Mikro cylinder gage and the Mikro piston gage, both of which are being distributed by the George H. Wilkins Co., 180 N. Market St., Chicago, Ill.

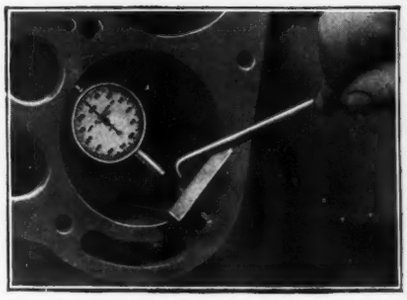
With the cylinder gage the repairman can actually prove to his customer that he is wasting oil and gas and fouling spark plugs because of worn cylinders. They can be tested before his eyes for roundness, straightness, size or scoring; or allow him to make his own test.

The construction of this gage is very simple, consisting of but two units; the indicator or dial, which can be removed and used as an inside micrometer, and the saddle with a supporting stud upon which the indicator dial is placed and which holds it at right angles to the axis of the cylinder. This Mikro-Indicator cylinder gage measures exact diameters from 2⅝ in. to 5 in., the adjustable rear contact passing through the saddle plate and riding the cylinder diametrically opposite the front contact point.

The Mikro-Indicator piston gage is an adaptation of this company's dial indicator to a bench gage for rapidly checking the diameter of pistons, piston pins and other cylindrical articles with diameters up to and including 6 in.

With this instrument pistons can be checked for roundness, diameter and uniformity; piston pins can be rapidly sized; and flat pieces gaged for thickness.

Variations are instantly shown on the dial; larger dimensions appearing on the steel scale in inches, by sixteenths; smaller dimensions and variations on the dial in thousandths of an inch. The price of these instruments is $15 each.

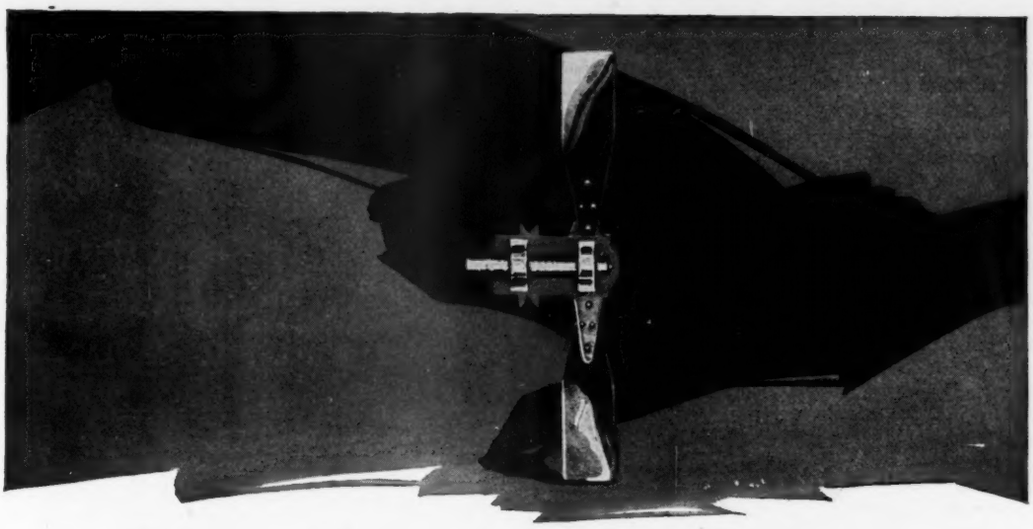


The Upper View is That of the Mikro-Indicator Piston Gage, and the Lower of the Cylinder Gage

Packard Installs Flat Rate System

A system of standardized service which will cover 400 of the most common repair operations has been put in effect by the Packard Motor Car Co. throughout its entire distributing organization. The plan is a result of two years' study by factory executives and distributors, and will cover both Packard trucks and passenger cars. It will permit Packard service to be performed throughout the country on a definite price basis.

SKF



Deep-Groove Ball Bearings Make A Good Fan Better

THE EFFICIENT operation and life of an engine depend considerably upon the fan. But no matter how good the fan may be, it cannot perform its full duty unless properly supported by reliable bearings. With deep-groove ball bearings, properly installed and mounted, the fan maintains its setting indefinitely.

Subject to the tight pull of oil-and water-soaked belts, sudden speed changes and vibration, plain bearings soon wear or bind. On the other hand, since friction is practically eliminated by the use of deep-groove ball bearings the fan will operate at high speed with loose belts which would slip and wear and fail to turn a plain-bearing equipped fan.

When deep-groove ball bearings are used, dirt and water blown back from the radiator cannot enter the bearing and cause damage, for the sealed housings eliminate foreign matter and keep the oil from leaking out.

Where performance counts, deep-groove ball bearings as made by the Hess-Bright Manufacturing Company are invariably found.

THE HESS-BRIGHT MANUFACTURING COMPANY

Supervised by SKF INDUSTRIES, INC., 165 Broadway, New York City

751

Races displaced to show DEEP-GROOVE bearing carrying maximum end thrust in a forward direction.

Races displaced to show THE SAME bearing carrying maximum thrust in reverse direction.

BALL BEARINGS
The Highest Expression of the Bearing Principle

THIS SYMBOL IN ANY ADVERTISEMENT MEANS: SEE "CHILTON AUTOMOBILE DIRECTORY" FOR COMPLETE BUYING INFORMATION

Taken From Current House Organs

Hitting the Nail on the Head

The profiteering price cutter who takes a standard, identified, widely wanted article and reduces the standard price in order to deceive the unwary customer, is a trade pirate. He is a spider luring the puzzled customer into his web. He is not a public benefactor, he is a public malefactor. His predatory plan is to fool the purchaser by giving him a few cents on one transaction so that he may rob him of dollars on others. He is a price cutter in order to be a profiteer. He gives 25 buyers a bargain on known goods so that he may overcharge 500 customers on unknown goods. He piles up profits for his department store or mail order house by the tactics of the green goods man and advertising fakir and the deceived public foots the bill. His success, built on unfair methods, means higher price and lower quality on all goods. In the beginning he robs the customer by fraud and in the end devours him by extortion.

The profiteering price cutter ruins the reputation of high-grade goods and destroys the good will of the makers, thus stealing both purse and good name in one operation. He advertises standard goods at a loss and then seeks to persuade the public to accept substitutes on which he makes money. He demoralizes the price and the product. He forces other dealers to follow his lead or refuse to handle the article. He restricts sales and lessens distribution. His unfair practices leave the manufacturer helpless to protect his business, into which he has put his name, his labor and his money.

The profiteering price cutter drives the small distributor to the wall by the worst form of illegitimate competition. He destroys competition by the very practices the Anti-Trust laws were intended to prevent. He is the cut-throat competitor who is everywhere and always the forerunner of monopoly. He is a restrainer of trade and a lessener of competition. He robs the neighborhoods of their corner stores, which can give best service under fair competition. He shouts for a free market where, in a jungle war, his unscrupulous tactics may give him a strangle-hold on business.

The profiteering price cutter helps to weaken the honesty and morality of American business. He seizes any straw, however, flimsy, to free himself from moral and legal obligations to fulfill contracts and obligations. He breaks down the one-price-to-all system, which is an inseparable companion of business honesty. He is the author of many degrading tendencies in business. His spirit of disregard of fair play is encouragement to every cheat in business. He helps rot the fabric of American Commerce. He breeds the tax dodger and the canceller of honest contracts and the men who cheat but keep within the law. He encourages "gentlemen's agreements." He is an enemy of the public good and he must go.

Give the independent manufacturer of identified, guaranteed goods the right to maintain his price and his policy and protect his reputation and good will, which depends upon public approval of the price and quality of his product. That will assure a square deal for business and the public.—*The Leader*, A. E. A., Chicago, Ill.

The Poor Old Truck

A motor truck is the most peaceful thing I know of. All it demands is decent treatment, and even though it seldom gets the treatment that it deserves, it will work its tires off serving its not always appreciative owner. Day after day it carries heavy burdens—frequently too heavy—satisfied with the potions of bad smelling liquids and smeary greases, which are so begrudgingly given it.

If, groaning under a great load, one of its over-strained parts gives way, the Poor Truck is harshly cursed and "wished" into that torrid zone where the radiator would boil bone-dry in a small fraction of a second.

Abused, neglected, the Poor Truck goes on and on until there comes a day when the Owner, ashamed of the wretched wreck for which he disclaims all responsibility, tries to trade it in for a new outfit, and he gets as mad as hell when some soulless seller refuses to trade even or give him liberal "boot." That's the time when the old worn-out relic of misuse comes back strong. It's easily worth five times what anyone would give for it. It's so good that the Owner hates to part with it, but goes hunting for a lover of antiques who is willing to trade something for nothing.

Oh, yes—he finds what he is looking for. There are still some sellers, so anxious to do business, that they will take from a tearful owner his most cherished possession and on a trade-in allow him only half of what he asked for but twice what he had ever hoped to get.

And what becomes of the faithful carrier that had served its owner so well and so long? Why, it becomes part of the physical assets of the philanthropist who is accumulating a museum of what his unsympathetic creditors will later refer to as "piles of junk."

So the much-abused Truck at last gets even with mankind for all it has been made to suffer. It doesn't "get" the builder; for it owes its existence to him. It hasn't anything against the owner, for didn't he always feed it gasoline and oil and grease and water? But it hates that Collector, who after appraising it so highly drove it into the back yard and made it a part of a business-killing collection of frozen assets.

And as Time and his rough playmates, The Elements, romp over and deface the Poor Old Truck it doesn't seem to care—it finds comfort in the thought that sooner or later the Collector will go broke and the frozen assets will go through the melting fire of a sheriff's sale. And that'll settle both of them—*Driver Dan*, Sterling Motor Truck Co., Milwaukee, Wis.

A Fatal Disease

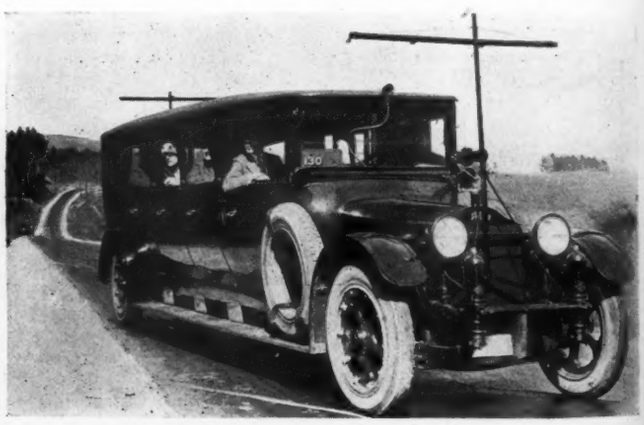
Ever see a really successful salesman who was seriously afflicted with that malady commonly designated as enlargement of the head? Of course, you haven't, because the successful chap doesn't get that way.

The swellheads are invariably the little fellows who contract the habit of looking back at those they have distanced rather than keeping their eye on the leader. The man who continually looks ahead, can find no possible excuse for self-glorification, because he can always see those who are so vastly his superior that he cannot but realize his own humble position.

The swellheaded chap does not advance he is too well satisfied with himself. He has no established ideals toward which he is constantly striving, which represent one of the prime essentials to successful selling. Salesmanship is one of the greatest of all vocations, and it deserves every ounce of energy, enthusiasm, thought and study that can be devoted to it. There is no room for the know-it-all.—*Transport Headlight*, Transport Truck Co., Mount Pleasant, Mich.

Radio Concerts for Bus Passengers

Should tests which the California Transit Company, of Oakland, Cal., started recently, prove successful many of the eighty-five White buses operated by this line will be equipped with radio phones to pick up daily radio concerts in the bay region. It was found that by a sacrifice of speed concerts were as audible when the bus was in motion as they are when standing at the curb.



Principles of Motor Bus Design and Operation

(*Continued from page 14*)

full complement of passengers on both decks is 52 in. from the ground. With our type-J single-deck bus, this dimension is 38 in. It is interesting to note that when rounding corners, even at a high rate of speed, skidding will occur due to centrifugal force and overturning is scarcely possible. Furthermore, rolling or sidesway is practically eliminated.

* * *

Among the constructional difficulties in connection with the production of low-level equipment, one of the problems is to obtain a flat floor. There is a natural tendency for the components to project above the frame and therefore through the floor. To avoid this, special design is required. The effect of a flat floor is very pleasing to the eye. Its structural strength is greater. It is less costly to keep in repair and there is less possibility of accidents due to the passengers' feet coming into contact with the obstructions during the boarding and alighting processes.

Wide Frame, Track and Spring Centers

These features are necessary to provide for adequate vehicular stability and, in conjunction with a low center of gravity, make for maximum safety. The necessity of providing proper stability applies equally to single and double-deck vehicles. It may be said that the added risk due to the top-deck load with the latter is more than equalled by the faster speed of the single-deck unit.

Apart from the matter of safety, a wide frame is necessary in connection with the body construction. Obviously it is desirable to support the body as far out as possible, for in all cases the seating arrangement is such that the passengers are grouped about the outer edges. Then, the wide frame admits of the lightest possible form of body under-frame. The wide frame also is a factor from the standpoint of the passengers' comfort. This point will be referred to later.

We believe that the overall length of a motorbus for city service should not exceed 26 ft.; the total width, 7 ft. 6 in.; and the overall height for single-deck vehicle, 9 ft. With the double-deck bus, the last-named dimension should be such that a person standing on the top deck can clear a 14-ft. structure. With these dimensions we have found it possible to accommodate comfortably 51 seated passengers with our double-deck, and from 25 to 29 with our single-deck vehicle. Whether this practice is economically correct for all localities, we cannot say. We have, however, up to the present found that this arrangement works out very well both in our own service and in the service of those who have purchased our equipment.

Next, there is the question of important dimensions other than those overall, such as the wheelbase, which naturally affects the axle load distribution, the turning-radius and the general comfort and balance of the vehicle. For the class of vehicle now under discussion, we believe that this dimension should not be less than 168 nor more than 180 in.

The front track should be ample in width and not less than 65 in., for to turn a bus within the intersection of the average city street, it is necessary to move the front wheels through an angle of not less than 35 deg. This determines the distance between the front axle pivots and the springs. The spacing of the front springs should not be less than 36 in., since they are responsible to a large extent for the stabilization of the vehicle when turning a corner.

Regarding the rear track, we believe that the outer edge of the tires should closely correspond to the extreme overall width of the body and that the rear springs should be as close to the tires as is practical. For buses as above described, the rear track should not be less than 72 in. This will bring the distance between the springs to approximately 52 in. Having decided the approximate distance between the vehicle springs, it naturally follows that the best design is to arrange the frame dimensions so that they connect with the springs in the closest and most practical manner.

Effective Brakes

Perhaps the most difficult problem that engineers must face is the brake question. Even now it has not as yet been solved entirely satisfactorily, at least insofar as our knowledge goes. With the bus, the number of applications is vastly in excess of that of the average truck or automobile, and the brakes of a bus must be sufficiently powerful to lock the wheels at any moment. Yet the effort required for average application must not be such that a driver may become exhausted as a result of the work imposed upon him.

Particular attention must be paid to the location of hand-brake lever. It should be positioned so that it can be grasped firmly without moving the body out of the normal seated state. We believe the best practice is to have the lever arranged for a push and not a pull-on. Time can thus be saved, and a fraction of a second is often the determining factor from an accident-prevention standpoint.

The brakes of a bus must be free from undue noises such as squeals or rattles. This means, among other matters, the use of special brake-drum material. The conventional soft pressed steel is practically useless. The best plan is to employ treated steel forgings or, failing in this, steel castings with a high carbon-content.

Friction surfaces must have long life, and the adjustment be such that no tools or special skill are necessary. We attach considerable importance to the matter of foolproof adjustment.

The braking action must not be too abrupt. It must be positive yet not sudden and violent, for such a condition is exceedingly severe on the driving members, tires and body. It is also a frequent source of accidents from which serious claims may result. Brakes must be sufficiently good, yet not too good. Excessively efficient brakes have a most marked influence on tire wear. It may be said that tire wear is almost directly proportionate to the effectiveness of the brakes.

In bus operation it is desirable from every point of view to cover the route as quickly as safety will permit. In this manner the maximum number of passengers can be carried daily. With a fixed maximum-speed, this means fast deceleration and acceleration. Expressed in another way, the problem is to move from a stop in one location to a stop in another in the least time. In our own service this must be done without exceeding a speed of 15 m.p.h., or accelerating or decelerating faster than 2 m.p.h. per sec. A still more rapid rate of deceleration is, of course, available for emergency, but it will be uncomfortable and unsafe, especially for standees.

Short Turning-Radius

One of the great advantages of a bus over any other form of transportation unit is its flexibility. A bus can be switched around at any point, and it is highly desirable that it should be able to make a complete turn in the average thoroughfare without backing, for the latter practice if followed in congested areas merely adds to both confusion and congestion. There is also a marked possibility of increased number of accidents.

A short turning-radius is dependent on the interference of the tires with the drag-link, front springs or frame, when the wheels are turned at the maximum angle. The controlling elements are wheel-spring tracks and wheelbase. As the radius of the steering angle equals the wheelbase divided by the sine of the front-wheel lock, it can be seen that a wheelbase of reasonable length is important to secure a short turning-radius.

From the viewpoint of safety, the design features dictated by human considerations are

(1) Easy steering
(2) Clear vision for driver
(3) Comfort and convenience for driver

Easy Steering

The steering of a bus should be at least as easy as that of the average automobile. To operate a stiff steering-gear is a hardship that certainly should not be inflicted upon the driver of a public-service vehicle. A driver's energy and effort must be concentrated on his regular duties, and if he becomes fatigued through the expenditure of unnecessary effort, faulty operation is bound to result.

* * *

It is highly desirable that there should be an absence of shocks at the steering-wheel. This is largely controlled by the total ratio, but also by the distance be-

The Two Kinds of Tests This Rolled Steel Wheel Passed

Imagine the impact caused by a 1200-lb. weight falling from a height of fourteen feet, and striking the outer edge of the tire base of a truck wheel!

This impact is the equivalent of the road shock received by the rear wheel of the average 3½-ton truck that, speeding along at 20 miles an hour, strikes a sharp obstruction in the road.

This severe laboratory test is typical of a series of such tests that the Bethlehem Rolled Steel Truck Wheel passed, including a compression test, a side deflection or skidding test, a tractive effort test, tests to determine effects of braking and driving on spokes, a shock test, and a series of fatigue and impact tests, to prove the correct distribution of metal in various points of the wheel.

Prolonged road tests, under conditions of hardest commercial service, followed these laboratory tests. The purpose of these road tests was to wreck the wheels. But the wheels could not be wrecked; they proved their stamina on the road as conclusively as they did in the laboratory.

You can put Bethlehem Rolled Steel Truck Wheels under a truck and forget them.

A copy of Catalog RC will gladly be sent on request.

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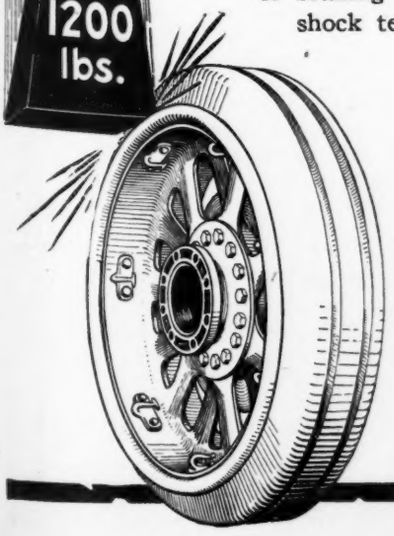
1200 lbs.



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tween the point of contact of the wheel and the road and the intersection of the knuckle center-line and the road.

Minimum steering-wheel travel is important as it makes a change of hand position unnecessary for ordinary driving. It also decreases the apparent back-lash, which is present in all steering mechanisms. The steering-wheel travel is roughly inversely proportional to the total ratio, which is kept as low as possible for this reason.

Clear Vision for Driver

This very important feature can be accomplished only as a result of joint chassis and body design. The driver should be located close to the left-hand side. This permits him to observe and also to signal his intentions to oncoming traffic. There should be absolutely nothing obstructing his view. He should face clear glass. It should also be mentioned that with single-deck vehicles the placing of the driver well over on the left-hand side provides for the very necessary boarding and alighting space for passengers and adequate room for operation of door.

Briefly, a driver's vision should be such that when seated, even back of a closed windshield, he will have nothing on which he can readily concentrate, no vertical posts or obstructions of any kind. He should just naturally sense that he is in the open.

Comfort and Convenience for Driver

This is largely a question of seat formation in conjunction with the correct positions for brake, change-speed levers, pedals, accelerator, etc. Obviously, it is not a practical matter to give the driver of a bus as much room as with a touring car; therefore, much care and thought must be paid to the placement of pedals and levers. The conventional cowl as used in automobile practice is almost out of the question, for anything that tends to increase the overall length of the vehicle is distinctly undesirable, particularly if such increases add nothing to the passengers' seat or pay-load space.

The driver should be comfortably seated at all times. He should be able to reach his change-speed or brake levers without body movement. He should have ample leg-room and not be obliged to cramp his limbs when his feet are either on or off the pedals.

Comfort and Convenience of the Public

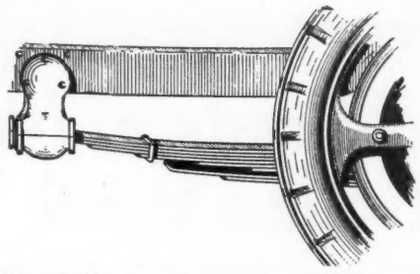
The American public is automotively inclined and the percentage of those owning cars is so large that when riding in any self-propelled vehicle, there is a natural tendency to compare its behavior with that of an automobile. In designing a bus this factor must under no circumstances be lost sight of. The success of any public utility depends on the good will of the public. It has been correctly stated that the permanence of any business depends upon the good will of those it serves and that no business can achieve permanent success that does not give in exchange for its earnings at least an even measure of helpful service. This applies especially to public utilities, and the truth has been abundantly proved in connection with the operation of our enterprise.

From the viewpoint of design, it is essential that consideration be paid to the attitude of the public as a whole. It is not enough to consider only the attitude of the actual riders; regarding the matter of comfort from these somewhat different angles, it is necessary that attention be given to

(1) Riding ability
(2) Reliability
(3) Silence of operation
(4) Smoothness of starting and stopping

Riding Ability

Broadly, this is a matter of proper spring-design. There are, however, other important influences; the wide frame, track and spring-centers bear materially upon this question, for the nearer the wheels are to the outer edge of the body, the less will be the movement to which



Illustrating the Progressive Spring Arrangement Used on the Type J Bus. Mack Type of Rubber Insulators Are Used.

passengers must be subject when obstacles are passed over. Again, with the wider track, many of the ruts and depressions created by vehicles of narrower gage, will be passed by. Incidentally, this is quite an important matter from the standpoint of road wear. The wide track also diminishes the wheel-pocket projection inside of body. The modern tendency is to employ cross seats and with the narrow-gage vehicle the wheel pockets are a source of much discomfort to those seated upon the inside immediately over them. A rigid frame, correct axle-load distribution and minimum overhang are all factors that make for better riding performance.

Apart from the points briefly touched upon above, the controlling factor from the standpoint of riding ability is, of course, the design of the suspension itself. Obviously, the difficulty is to obtain good riding under all conditions of load. Spring design is always a compromise; a spring must be able to withstand maximum load, yet vehicles are expected to ride reasonably well when light.

We believe that the answer will be found largely in the employment of what we term the progressive spring as illustrated herewith. It will be seen that spring is split into two parts. The top half takes the weight of vehicle, body and a certain proportion of load. The bottom part or helper, comes into action progressively. The top part must make a rolling contact with the bottom. One of the great advantages of this system is the fact that for no additional cost or weight, a marked improvement in performance is possible.

For our single-deck equipment we have standardized the Mack type of rubber shock-insulator. This is by special arrangement with the Mack company. We are experimenting with this device for our double-deck vehicle but as yet are not prepared to state the results. This arrangement, in conjunction with our progressive system, markedly improves the riding conditions. It also avoids the necessity for lubrication and for replacement of shackles, shackle-pins and bushes; also, no spring-eyes are required. Experience up to the present shows that we may expect a very satisfactory life from rubber blocks.

Silence of Operation

It is a problem to produce a silent vehicle. It is doubly a problem to retain this state throughout the life of the vehicle. Silence necessitates freedom from engine vibration, q iet transmission gears, evenly stepped gears, a quiet rear end, and generally the elimination of all rattles and squeaks from both body and chassis. To attain this, every detail of design must receive the most minute care. Silent operation is necessary in crowded thoroughfares, and certainly the people demand this condition in the residential areas, particularly at night when the streets are comparatively empty and noises become automatically emphasized.

Reliability

The word "reliability" with a bus attains an entirely new meaning. The entire design must be predicated on ability to give uninterrupted service between clearly defined periods, preferably based on mileage. The ability of a bus to fulfill this requirement with particular reference to the duration of period will at once determine the utility of the design. The public will not long tolerate an unreliable service. Failures with an automobile cause confusion enough but the number of persons involved as compared with a bus is relatively insignificant.

One point it is especially desired to bring home is that under average conditions, drivers cannot be expected to make any attempt whatever to spare their equipment. All they are concerned with is stopping for passengers, avoiding accidents, and keeping in their places on the road in accordance with their schedule. Everything must be subordinated to these three things, and in cases where vehicles cannot stand up under such conditions, either the required changes must be made to enable them to do so or they should be scrapped, for assuredly they have no place in the operation of a public utility.

Smoothness of Starting and Stopping

Smoothness of starting is primarily a clutch function, but of course the driver is a factor. Correct gear-ratios, a satisfactorily performing engine and proper axle-load distribution are contributing influences. Quick starts and stops are highly dangerous from the viewpoint of possible accidents. Some of the heaviest claims for injuries and damages result in this manner. Apart from injuries to passengers, quick starts and stops do more

toward causing damage to the chassis and the bodies than anything else. All driving members are subject to abnormal stresses with the former. With the latter, the fore-and-aft or lateral movement, which of necessity results, causes a loosening up of post joints, panelling, etc., and consequently a high rate of depreciation.

Of the various features that make for efficient and economical operation, the clutch is perhaps one of the most important. We employ exclusively a clutch of the single-disk type. The spring pressure is evenly distributed over the entire surface of the friction members by 20 small springs, the levers are balanced against centrifugal force and the disk is exceedingly light, thus simplifying the changing of gears. Incidentally, a clutch-stop has been found unnecessary.

Minimum operating cost demands:

(1) Maximum accessibility.
(2) Minimum consumption of labor and material. This of course means excellence of both materials and workmanship.
(3) Minimum consumption of fuel
(4) Minimum weight, particularly that which is unsprung
(5) Maximum safe speed. This naturally comprehends rapid acceleration.
(6) Maximum tire-mileage.

Maximum Accessibility

It is fundamentally necessary that the design of a motorbus be such that inspection and repairs can be carried out quickly and economically. We believe it is imperative that separate unitary construction be followed. For instance, engines, carburetors, all electrical equipment, fans, clutch couplings, transmissions, control levers, axles, wheels and propeller-shafts should all be entities unto themselves, so that the repair of any one of these assemblies will not necessitate the removal of any other.

* * *

Minimum Consumption of Labor and Material

From a financial viewpoint, the success or failure of a utility operating buses depends upon the cumulative additions or subtractions of small amounts expended on either labor or material. Sometimes the items may appear insignificant but, taken as a whole and over lengthy periods, the story is entirely different. When working, a bus is a heavy consumer of both labor and material. The consumption is perhaps much greater than is generally supposed. To afford a practical illustration, the accompanying table representing the actual consumption by our company of some of the major elements for the year 1921, may be of interest. These figures are based on the average of all buses.

Fifth Avenue Coach Company's Cost Per Bus for 1921

Gasoline		$1,125.94
Lubrication		109.42
Tires		284.34
Repairs to Chassis		
Labor	$676.97	
Material	759.81	
		1,436.78
Repairs to Bodies		
Labor	$359.00	
Material	162.44	
		521.44
Drivers		3,071.71
Conductors		2,692.48
Total		$9,242.11

From a casual study of these data it will be seen that a relatively small percentage of saving, if applied to any of the items and then multiplied by a large number of vehicles, must total a vast sum annually. If one assumes that the equipment in question is of good design and that its maintenance is economically undertaken, then how much more important does this issue become when the reverse is true.

Perhaps it will not be out of place here to point out that the profit of the average utility expressed percentagewise, usually does not run beyond one figure, and that there are a vast number of utilities where the figure is in red. To change the color and to exceed the single-figure basis, requires all that is best in design, material, workmanship and operating care.

* * *

Minimum Weight

It seems scarcely necessary here to argue as to the desirability of light weight. These remarks particularly apply to the matter of unsprung weight. Assuming good design, obviously minimum weight means minimum fuel-consumption, maximum acceleration and speed and minimum costs for repairs and renewals. These are the controlling elements.

Clearly, the lighter the vehicle, the easier the solution of our problems. Heavy vehicle-weight means unnecessarily large tires, stronger axles and frame, larger brakes, slower gear-ratios and, last but not least, more engine power. The entire theory of design should be based on the highest safe vehicle-speed for the smallest throttle-opening, and consequently the minimum number of engine revolutions.

Maximum Safe Speed

The greatest single factor from the standpoint of economical operation is speed. This point is perhaps not sufficiently recognized. The following facts in connection with our operation may make the matter somewhat clearer. During 1921 we spent in platform payment, drivers' and conductors' wages, in round figures, $1,625,000. So, for each 1-per cent economy in speed there is a yearly potential saving of more than $16,000. Looking at the situation another way, the ratio of expenditure between our platform payment and all money expended in connection with repairs and renewals to chassis and bodies, is approximately 5 to 1.

From this it is clear that, while there are always opportunities to effect a saving in connection with maintenance methods generally, the real solution is to employ the fastest possible safe speed and to drive the vehicles up to the limit of their endurance. This, of course, necessitates all that is best from the standpoint of design. Naturally, to maintain a high average rate of speed, rapid acceleration is essential. But in connection with this matter it is well to bear in mind that there is nothing gained and much lost if the engine power is in excess of actual requirements, for it is bound to be abused.

Maximum Tire-Mileage

In the earlier days of bus operation, the tire question was one of our chief anxieties. Today the situation is very different, for wonderful improvements have been made in tire manufacturing methods. Of course, there is no sense in decreasing tire expenditures at the cost of the equipment generally. Resilient tires are essential and too great a wear must not be permitted. It is our regular practice to remove a tire immediately the rubber has worn to within 7/8 in. of the hard base.

In looking back over our records, it is extremely interesting to note that in 1911 our cost per mile for tires was 4.93 cents. From that date on, a steady reduction has been effected. The figure for 1921 was 0.87 cents per mile, and this, of course, includes the use of six tires.

Conclusion

As the result of long experience in connection with the design, construction and operation of buses, we are convinced more than ever that trucks or automobiles, modified or unmodified, are absolutely incapable of giving satisfactory and economical service if operated as buses. The tendency today is to employ trucks or automobile chassis as buses, or to attempt to modify their construction, then to re-christen them. This is a dangerous policy from the standpoint of both the builder and the user, and eventually it must surely result in dissatisfaction and disillusionment.

There is another and very important matter: We must not lose sight of the fact that the bus has not made good in some of the localities where it has been tried out. We are constantly confronted with failures such as those at Des Moines, Toledo, Kansas City, and other cities. Such failures, when analyzed, invariably point to the fact that the combination of extemporized equipment, indiscriminate operation, overloading and lack of experience is responsible. But these failures can be avoided, and the automotive industry in its own interest should do all that is possible to guard against such occurrences.

It seems scarcely necessary here to comment upon the splendid achievements of the Society in connection with standardization work in general. Certainly, this has been a controlling influence in the development of the automotive industry. We believe much would be gained if it should now concentrate upon the motorbus. What we have in mind, is the standardization of certain of the main dimensions; for example, front and rear-axle tracks, spring center-to-center distances, frame width, dimension between dash and wheel pocket, seat dimensions, aisle widths, etc., for the various classes of service.

The matter of body design has not been touched upon since this is a subject that, because of its magnitude, must receive separate treatment.

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What other tires could have done this?

The Midwest Refining Company recently had a lot of machinery to transport from Casper, Wyoming, to their oil fields at Salt Creek, a distance of about fifty miles. Six pieces of this machinery weighed over thirteen tons each and two weighed slightly over fourteen tons. The one on the truck above weighed 28,450 pounds.

The road over which this machinery had to be hauled was "one of the worst in the Wyoming oil fields, full of ruts and bumps, and at the time was covered with ice and snow."

It seemed impossible for any tires to carry these tremendous loads over such a road but the Midwest people felt that Caterpillars would do the job if any tires could.

The loads were so heavy that the Caterpillars bulged over the flanges fully two inches on each side at the point of contact with the road but in spite of this terrific punishment they finished the job without loosening at the base in a single place. They were cracked to some extent but are still good for many more miles.

No matter what your tire requirements may be, at least you should get acquainted with tires that can accomplish such a feat as this. Let us send you our little booklet "Caterpillar Logic."

Caterpillars are made in sizes suitable for trucks of every type and weight

Kelly-Springfield Tire Co.

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